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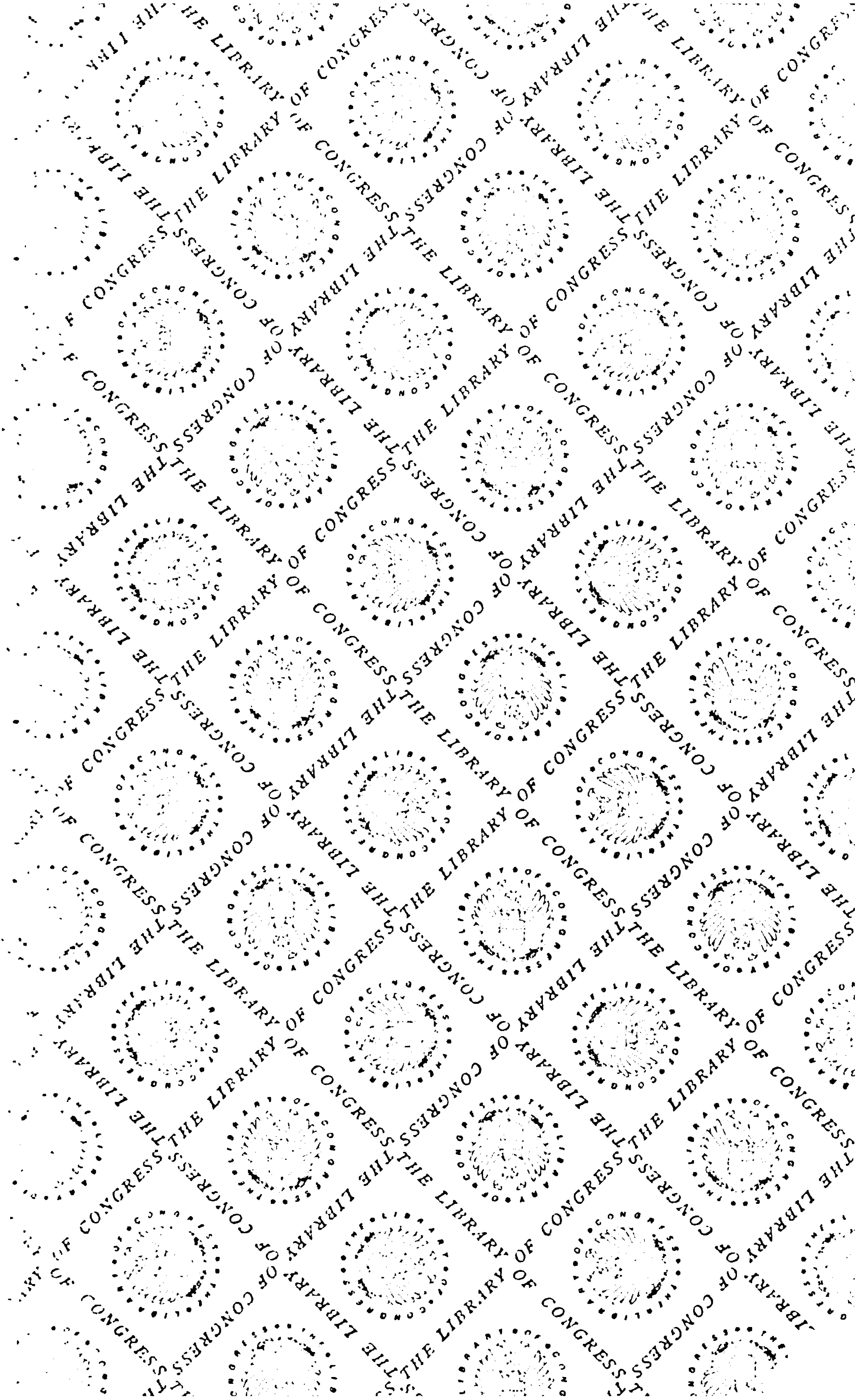
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RIVER REGULATION, FLOOD CONTROL, AND WATER CONSERVATION AND UTILIZATION

U.S. Congress. Senate.

HEARINGS

BEFORE THE

COMMITTEE ON COMMERCE, UNITED STATES SENATE

SIXTY-FOURTH CONGRESS
SECOND SESSION
ON

H. R. 14777

AN ACT TO PROVIDE FOR THE CONTROL OF THE FLOODS OF THE MISSISSIPPI RIVER AND OF THE SACRAMENTO RIVER, CALIFORNIA, AND FOR OTHER PURPOSES

AND

S. 5736

A BILL TO PROMOTE INTERSTATE COMMERCE, AGRICULTURE, AND THE GENERAL WELFARE BY PROVIDING FOR THE DEVELOPMENT AND CONTROL OF WATERWAYS AND WATER RESOURCES, FOR WATER CONSERVATION, FOR FLOOD CONTROL, PREVENTION, AND PROTECTION; FOR THE APPLICATION OF FLOOD WATERS TO BENEFICIAL USES; AND FOR COOPERATION IN SUCH WORK WITH STATES AND OTHER AGENCIES, AND FOR OTHER PURPOSES

TOGETHER WITH

HEARINGS, REPORTS, AND DOCUMENTS OF PRECEDING CONGRESSES

Printed for the use of the Committee on Commerce

WASHINGTON
GOVERNMENT PRINTING OFFICE
1917

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RIVER REGULATION, FLOOD CONTROL, AND WATER CONSERVATION AND UTILIZATION.

TUESDAY, DECEMBER 19, 1916.

United States Senate,
Committee on Commerce,
Washington, D. C.

The committee met at 10 o'clock a. m. in the committee room, Capitol, pursuant to call, Senator Duncan U. Fletcher presiding.

Present: Senators Fletcher (chairman), Vardaman, Kirby, Shields, Martin, Sherman, Watson, Kenyon, Jones, Nelson, and Harding.

The committee proceeded to consider the bill (H. R. 14777), "An act to provide for the control of the floods of the Mississippi River and of the Sacramento River, Cal., and for other purposes," which is as follows:

[H. R. 14777, Sixty-fourth Congress, first session.]

AN ACT To provide for the control of the floods of the Mississippi River and the Sacramento River, California, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That for controlling the floods of the Mississippi River and continuing its improvement from the Head of the Passes to the mouth of the Ohio River the Secretary of War is hereby empowered, authorized, and directed to carry on continuously, by hired labor or otherwise, the plans of the Mississippi River Commission heretofore or hereafter adopted, to be paid for as appropriations may from time to time be made by law, not to exceed in the aggregate $45,000,000: *Provided,* That not more than $10,000,000 shall be expended therefor during any one fiscal year.

(a) All money appropriated under authority of this section shall be expended under the direction of the Secretary of War in accordance with the plans, specifications, and recommendations of the Mississippi River Commission as approved by the Chief of Engineers, for controlling the floods and for the general improvement of the Mississippi River, and for surveys, including the survey from the Head of the Passes to the headwaters of the river, and a survey of the Atchafalaya Outlet so far as may be necessary to determine the cost of protecting its basin from the flood waters of the Mississippi River either by its divorcement from the Mississippi River or by other means, and for salaries, clerical, office, traveling, and miscellaneous expenses of the Mississippi River Commission.

(b) That no money appropriated under authority of this section shall be expended in the construction or repair of any levee unless and until assurances have been given satisfactory to the commission that local interests protested thereby will contribute for such construction and repair a sum which the commission shall determine to be just and equitable but which shall be not less than one-half of such sum as may have been allotted by the commission for such work: *Provided,* That such contributions shall be expended under the direction of the commission, or in such manner as it may require or approve, but no contribution made by any State or levee district shall be expended in any other State or levee district except with the approval of the authorities of the State or district so contributing.

17.15637

(c) Any funds which may hereafter be appropriated under authority of this act for improving the Mississippi River between the Head of the Passes and the mouth of the Ohio River, and which may be allotted to levees, may be expended upon any part of said river between the Head of the Passes and Rock Island, Illinois.

(d) No money appropriated under authority of this act shall be expended in payment for any right of way for any levee which may be constructed in cooperation with any State or levee district under authority of this act, but all such rights of way shall be provided free of cost to the United States: *Provided*, That no money paid or expense incurred by any State or levee district in securing such rights of way, or in any temporary works of emergency during an impending flood, or for the maintenance of any levee line, shall be computed as a part of the contribution of such State or levee district toward the construction or repair of any levee within the meaning of paragraph (b) of this section.

That the watercourses connected with the Mississippi River to such extent as may be necessary to exclude the flood waters from the upper limits of any delta basin, together with the Ohio River from its mouth to the mouth of the Cache River, may, in the discretion of said commission, receive allotments for improvements now underway or hereafter to be undertaken.

Upon the completion of any levee constructed for flood control under authority of this act, said levee shall be turned over to the levee district protected thereby for maintenance thereafter; but for all other purposes the United States shall retain such control over the same as it may have the right to exercise upon such completion.

SACRAMENTO RIVER, CALIFORNIA.

SEC. 2. That for controlling the floods, removing the débris, and continuing the improvement of the Sacramento River, California, in accordance with the plans of the California Débris Commission, the Secretary of War is hereby authorized and directed to carry on continuously, by hired labor or otherwise, the plan of said commission contained in its report submitted August tenth, nineteen hundred and ten, and printed in House Document Numbered Eighty-one, Sixty-second Congress, first session, as modified by the report of said commission submitted February eighth, nineteen hundred and thirteen, approved by the Chief of Engineers of the United States Army and the Board of Engineers for Rivers and Harbors, and printed in Rivers and Harbors Committee Document Numbered Five, Sixty-third Congress, first session, in so far as said plan provides for the rectification and enlargement of river channels and the construction of weirs, to be paid for as appropriations may from time to time be made by law, not to exceed in the aggregate $5,600,000: *Provided*, That not more than $1,000,000 shall be expended therefor during any one fiscal year.

(a) All money appropriated under authority of this section shall be expended under the direction of the Secretary of War, in accordance with the plans, specifications, and recommendations of the California Débris Commission, as approved by the Chief of Engineers, for the control of floods, removal of débris, and the general improvement of the Sacramento River: *Provided*, That no money shall be expended under authority of this section until assurances have been given satisfactory to the Secretary of War (a) that the State of California will contribute annually for such work a sum equal to such sum as may be expended annually therefor by the United States under authority of this section; (b) that such equal contributions by the State of California will continue annually until the full equal share of the cost of such work shall have been contributed by said State; and (c) that the river levees contemplated in the report of the California Débris Commission, dated August tenth, nineteen hundred and ten, will be constructed to such grade and section and within such time as may be required by said commission: *Provided further*, That said State shall not be required to expend for such work, for any one year, a sum larger than that expended thereon by the United States during the same year: *And provided further*, That the total contributions so required of the State of California shall not exceed in the aggregate $5,600,000.

(b) All money contributed by the State of California, as herein provided, shall be expended under the direction of the California Débris Commission and in such manner as it may require or approve, and no money appropriated under authority of this section shall be expended in the purchase of or payment for any right of way, easement, or land acquired for the purposes of this improvement, but all such rights of way, easements, and lands shall be provided free of cost to the United States: *Provided*, That no money paid or expense incurred therefor shall be computed as a part of the contribution of the State of California toward the work of improvement herein provided for within the meaning of paragraph (a) of this section.

(c) Upon the completion of all works for flood control herein authorized the said works shall be turned over to the State of California for maintenance thereafter; but for all other purposes the Uited States shall retain such control over the same as it may have the right to exercise upon such completion.

GENERAL PROVISIONS.

SEC. 3. That all the provisions of existing law relating to examinations and surveys and to works of improvement of rivers and harbors shall apply, so far as applicable, to examinations and surveys and to works of improvement relating to flood control. And the expenditures of funds hereafter appropriated for works and projects relating to flood control shall be made in accordance with and subject to the law governing the disbursement and expenditure of funds appropriated for the improvement of rivers and harbors.

All examinations and surveys of projects relating to flood control shall inclue a comprehensive study of the watershed or watersheds, and the report thereon in addition to any other matter upon which a report is required shall give such data as it may be practicable to secure in regard to (a) the extent and character of the area to be affected by the proposed improvement; (b) the probable effect upon any navigable water or waterway; (c) the possible economical development and utilization of water power; and (d) such other uses as may be properly related to or coordinated with the project. And the heads of the several departments of the Government may, in their discretion, upon the request of the Secretary of War, detail representatives from their respective departments to assist the engineers of the Army in the study and examination of such watersheds, to the end that duplication of work may be avoided and the various services of the Government economically coordinated therein: *Provided*, That all reports on preliminary examinations hereafter authorized, together with the report of the Board of Engineers for Rivers and Harbors thereon, shall be submitted to the Secretary of War by the Chief of Engineers, with his recommendations, and shall be transmitted by the Secretary of War to the House of Representatives, and are hereby ordered to be printed when so made.

In the consideration of all works and projects relating to flood control which may be submitted to the Board of Engineers for Rivers and Harbors for consideration and recommendation, said board shall in addition to any other matters upon which it may be required to report, state its opinion as to (a) what Federal interest, if any, is involved in the proposed improvement; (b) what share of the expense, if any, should be borne by the United States; and (c) the advisability of adopting the project.

All examinations and reports which may now be made by the Board of Engineers for Rivers and Harbors upon request of the Committee on Rivers and Harbors relating to works or projects of navigation shall in like manner be made upon request of the Committee on Flood Control on all works and projects relating to flood control.

SEC. 4. That the salary of the civilian members of the Mississippi River Commission shall hereafter be $5,000 per annum.

Passed the House of Representatives May 17, 1916.

The CHAIRMAN. Senator Newlands is present and desires to be heard regarding the bill. You may proceed, Senator.

STATEMENT OF UNITED STATES SENATOR FRANCIS G. NEWLANDS, OF NEVADA.

Senator NEWLANDS. Mr. Chairman and gentlemen, I wish to state in the first place I disclaim any unfriendliness to either one of these projects. On the contrary I believe in them. I know something about both of them. I have seen the country both with experts and without, and I believe that these projects are meritorious projects. But I wish to call your attention to the fact that there are two bills pending before the Senate. One, a bill (H. R. 14777) which covers these two projects with some general provisions for laying down rules for the investigation of future projects, and the other a bill introduced by myself (S. 5736), which provide for a general system of investigation and work regarding flood control. Now, the character of the two bills is shown by their titles. House bill 14777, Calendar 31, is an act to provide for the control of the floods of the Mississippi River and of the Sacramento River, Cal., and for other purposes. The Senate bill (No. 5736) which I have introduced, and it is a condensation and modification of bills that I have introduced for 12 years past, is entitled "A bill to promote interstate commerce, agriculture, and the general welfare by providing for the development and control of waterways and water resources, for water conservation for flood control, prevention and protection; for the application of flood waters to beneficial uses; and for cooperation in such work with States and other agencies, and for other purposes." The difference between the two bills, both with the same object, is that the House bill is a local bill relating to the lower Sacramento and the lower Mississippi Rivers, while the bill which I have introduced applies to every watershed in the Union and to all navigable as well as source streams.

The bills are not contradictory. Under the bill which I offer the work on the Mississippi River and the Sacramento River can be done, and you can have the necessary amendments inserted in that bill, as the only project appropriations now asked for are for these two projects, and then you will have a bill covering these two projects and also a bill covering the entire Union and providing thus a scheme of coordination of the scientific services, of cooperation with States, and of investigation, a scheme involving the expenditure for investigation and plans of whatever sum you fix—a million dollars or more—involving ultimately the reports by the organization thus created on projects resembling the Sacramento and the Mississippi project, which, after approval of Congress can be covered by the necessary appropriations. I want you to dismiss from your minds that part of the bill which I have been long urging, which calls for the sum of $60,000,000 annually for a period of 10 years. I still believe, however, that the wise thing to do is to candidly declare at the outset that we are entering upon a great governmental work involving ultimately the expenditure of hundreds of millions of dollars, so that plans can be formed commensurate with the undertaking and not minimized plans simply to meet temporary conditions and pressure.

Senator VARDAMAN. Does your bill embody substantially the provisions with reference to the Sacramento and the Mississippi Rivers of the flood-control bill that we are now considering?

Senator NEWLANDS. Absolutely; only it includes the storage of water for irrigation, the development of water power, intensive cultivation——

Senator VARDAMAN (interrupting). You provide that in another place; but if your bill provides the relief that the bill we are now considering does with reference to these two projects, and the work is to be done substantially as provided for in these two bills—you have been fighting for this for 10 years, and there is a great deal of merit in your ideas—are you willing to imperil the interests of the people living along these two rivers in order to force Congress to take this great comprehensive plan of yours? Why not let this bill go through, and then fight for the larger, and allow immediate relief for these people?

Senator NEWLANDS. There are other sections of the country that are suffering, not perhaps in the same degree as the lower Mississippi, but in high degree, and if you go along with a system of considering an individual project here and there we will reach no comprehensive results, and the proper way is to proceed on the lines I have indicated, which will provide only a moderate appropriation for organization, investigation, and plans.

Senator KENYON. What does your bill commit this Congress to; or does it commit Congress to the expenditure of any considerable sum?

Senator NEWLANDS. No, sir.

Senator KENYON. Dependent on the report of this committee?

Senator NEWLANDS. It does not commit Congress to any further expenditure.

Senator KENYON. It takes care of these two projects?

Senator NEWLANDS. Yes. I want to state to you that in the bill which I am urging I am willing that the appropriations for projects in that bill shall be entirely eliminated and that you shall substitute these two provisions regarding the Sacramento and Mississippi Rivers.

Senator HARDING. Suppose the committee recommends these two bills and starts them under way and at this same session adopts your bill creating this commission?

Senator NEWLANDS. You would have to pass it in the House. There is such a difference of views that, unless you unionize these two bills in one bill as a substitute for the House bill, you can not get anything.

Senator KENYON. I don't see why the Mississippi people object to his plan.

Senator VARDAMAN. As a matter of fact, I can understand if we are to put this on the House bill, it won't pass the House. It will not pass the House. They have never been able to make any progress in the House. This bill has passed the House. It gives the relief that Senator Newlands's bill proposes. Then, in the name of God and truth and justice, why should these people be held up in order that it might be put upon another bill the passage of which is very doubtful in the House?

Senator NEWLANDS. You can test it very quickly in conference committee as to whether the bill is going to pass the House. I believe it will pass the House; Senator Vardaman believes it won't. I believe that unless you place every watershed in this country in the line of relief it won't pass the Senate. I am perfectly willing that the entire appropriation shall be stricken out and the appropriations for the Sacramento and Mississippi Rivers substituted, and provide for a reasonable sum anywhere from a million dollars upward for the general work of organization and investigation.

Senator VARDAMAN. This bill that we propose here provides for investigation along the lines that you have proposed.

Senator **Newlands**. It is not upon the lines I propose. It preserves simply the present system which I claim is a faulty system. What is to be the action of this committee? Suppose you propose as a substitute for this bill the bill which I have offered, with the Sacramento and the Mississippi River appropriations in it? Then it goes into conference between the House and the Senate. Now, we will assume that the House disagrees, and the conferees disagree, and the House supports the House conferees; still you have a chance to retire from your substitute bill and to let the House bill go through. You can't imperil legislation at this session, in my judgment, upon this matter by providing for a comprehensive system. We have struggled 12 years for a comprehensive plan, and we have struggled along the lines indicated and urged a general measure, and we have found that men who are interested in the specific projects are so wrapped up in them that they will not consider a general measure.

In 1906, or thereabouts, Mr. Roosevelt organized the Inland Waterways Commission. He realized then the unsatisfactory character of the rivers and harbors bill, and the dissatisfaction of the country with [illegible] the kind of legislation that was going on and [illegible] the Inland Waterways Commission and put [illegible] organized the [illegible] was a member [illegible] put on it Mr. Burton as chairman. I [illegible] of that commission with Mr. Burton and Senator Bankhead and Senator Warner, the Chief of Engineers, the Chief of the Reclamation Service, the Chief of the Forestry Service, and one or two or three chiefs of other scientific services that relate to water, and we made a thorough investigation of this question, visiting every section of the country—the Mississippi River, the Missouri River, the Pacific coast, and other sections—and thoroughly familiarized ourselves with the whole question from the legislative point of view. I want to say that before the report of that Waterways Commission was made I had presented a bill including this scheme of general legislation, and when that committee sat in deliberation for weeks and months here under the leadership of Mr. Burton we sent in a report calling for the coordination of services, cooperation with States, and calling for investigation of plans and works. Let me read you a few sentences from that report—recollect that was over 10 years ago. [Reading:]

> A. We recommend that hereafter plans for the improvement of navigation in inland waterways, or for any use of these waterways in connection with interstate commerce, shall take account of the purification of the waters, the development of power, the control of floods, the reclamation of lands by irrigation and drainage, and all other uses of the waters or benefits to be derived from their control.
>
> B. We recommend that hereafter both local and general benefits to the people shall be fully considered in any such plans for the improvement of navigation in inland waterways or for any use of these waterways in connection with interstate commerce; and that wherever practicable Federal agencies shall cooperate with States, municipalities, communities, corporations, and individuals with a view to an equitable distribution of costs and benefits.
>
> C. We recommend that hereafter any plans for the navigation or other use of inland waterways in connection with interstate commerce shall take full account of transfer facilities and sites and of the location of tracks, grades, bridges, dams, depots, and other works on navigable and source streams, with a view to equitable cooperation between waterway and railway facilities for the promotion of commerce and the benefit of the people.
>
> D. We recommend that any plans for improving the inland waterways shall take account of the present and prospective relation of rail lines to such waterways and shall ascertain so far as may be whether such waterways when im-

proved will be effectively used in the face of railway competition; and that the relations between railways and waterways be further examined with the purpose of devising means of rendering the two systems complementary and harmonious and making such fair division of traffic that rates and management may be coordinated economically and with benefit to the country.

E. We recommend the adoption of means for ascertaining regularly all facts related to traffic on the inland waterways and for publishing the same in a form suitable for general use.

F. We recommend the adoption of means for ascertaining and rendering available, at such rate as to meet public necessities, all requisite data related to the physical character and general utility of the navigable and source streams of the country.

G. We recommend that hereafter any plans for the use of inland waterways in connection with interstate commerce shall regard the streams of the country as an asset to the people, shall take full account of the conservation of all resources connected with running waters, and shall look to the protection of these resources from monopoly and to their administration in the interests of the people.

H. We recommend that the Congress be asked to make suitable provision for improving the inland waterways of the United States at a rate commensurate with the needs of the people as determined by competent authority; and we suggest that such provision meet these requisites, viz, expert framing of a definite policy; certainty of continuity and coordination of plan and work; expert initiative in the choice of projects and the succession of works; freedom in selection of projects in accordance with terms of cooperation; and the widest opportunity for applying modern business methods.

I. We recommend that the Congress be asked to authorize the coordination and proper development of existing public services connected with waterways; and we suggest that such enactment might provide that the President of the United States be authorized, with the advice and consent of the Senate, to appoint and organize a National Waterways Commission, to bring into coordination the Corps of Engineers of the Army, the Bureau of Soils, the Forest Service, the Bureau of Corporations, the Reclamation Service, and other branches of the public service in so far as their work relates to inland waterways, and that he be authorized to make such details and require such duties from these branches of the public service in connection with navigable and source streams as are not inconsistent with law; the said commission to continue the investigation of all questions relating to the development and improvement and utilization of the inland waterways of the country and the conservation of its natural resources related thereto, and to consider and coordinate therewith all matters of irrigation, swamp and overflow land reclamation, clarification and purification of streams, prevention of soil waste, utilization of water power, preservation and extension of forests, regulation of flow and control of floods, transfer facilities and sites and the regulation and control thereof, and the relations between waterways and railways; and that the commission be empowered to frame and recommend plans for developing the waterways and utilizing the waters, and as authorized by Congress to carry out the same, through established agencies when such are available, in cooperation with States, municipalities, communities, corporations, and individuals, in such manner as to secure equitable distribution of costs and benefits.

* * * * * * *

Respectfully submitted.

THEODORE E. BURTON, *Chairman.*
FRANCIS G. NEWLANDS.
WM. WARNER.
J. H. BANKHEAD.
W J MCGEE.
F. H. NEWELL.
GIFFORD PINCHOT.
HERBERT KNOX SMITH.

SUPPLEMENTARY REPORT OF COMMISSIONER SENATOR FRANCIS G. NEWLANDS.

I concur in the report of the commission, but desire to emphasize my belief that it is of the highest importance that in dealing with subjects relating to the respective powers, rights, and interests of the Nation, States, municipalities, corporations, and individuals large powers and a comparatively free hand should be given to an administrative body of experts in the full development of projects, lest the complexity of the transactions, the time necessary to secure congressional approval, and difference of view as to purpose of method may result in indecision and delay, the worst enemies of effective development.

An ample fund should be provided, to be reinforced from time to time either by legislative appropriation or by bond issue, and the administrative board or commission should be given the power not only to investigate projects but also, when determined to be feasible, to enter, with the approval of the President, upon their immediate execution; but the power should be limited so as to prevent such administrative body from entering into any contract unless there are sufficient unappropriated moneys in the fund to meet the cost thereof.

Unless some method of construction and development insuring prompt decision and execution and continuous and consecutive work by a body of experts is adopted, I fear that the best of projects may be wrecked in the shoals and quicksands of legislation.

FRANCIS G. NEWLANDS.

It has been said here, and urged apparently as a matter of merit, that the flood-control bill of Mr. Humphreys does not include irrigation. It ought to include irrigation. There is an enormous stretch of country from here to here [indicating on map of the State of California] with the Sacramento River running from north to south and the San Joaquin River running from south to north, flowing into San Francisco Bay through the same outlet; there is a vast area of arid land running away to the south, for the north is better watered by rains than the south, and here we are planning to force all that water down into the bay without utilizing it. It seems to be regarded as one of the merits of this flood-control bill that it does not associate irrigation with it. I say it is one of the demerits of the bill and you should embrace not only the irrigation of arid lands, but the reclamation of swamp lands and the development of water power. There ought to be a splendid scheme of storage reservoirs inaugurated by the Government for that purpose. Such investigations and plans would be provided by my bill, which was approved by Theodore Burton, also by Mr. Taft when he was Secretary of War, afterwards approved by Mr. Stimson, afterwards approved in a most emphatic and enthusiastic way by Mr. Baker, and approved by a cabinet committee composed of the Secretary of War, the Secretary of Commerce, of the Interior, and of Agriculture, who were appointed by President Wilson to look into this matter and make their recommendations.

The CHAIRMAN. Wouldn't it be advisable to put your substitute bill before the committee?

Senator NEWLANDS. Yes; I can do that.

(Thereupon, at 12.10 p. m., the committee adjourned to meet at 10.30 o'clock a. m., Wednesday, Dec. 20, 1916.)

RIVER REGULATION, FLOOD CONTROL, AND WATER CONSERVATION AND UTILIZATION.

WEDNESDAY, DECEMBER 20, 1916.

UNITED STATES SENATE,
COMMITTEE ON COMMERCE,
Washington, D. C.

The committee met at 10.30 o'clock, a. m., in the committee room, Capitol, pursuant to adjournment, Senator Duncan U. Fletcher presiding.

Present: Senators Fletcher (chairman), Shields, Vardaman, Bankhead, Sheppard, Kirby, Sherman, Watson, Harding, Kenyon, Jones, Nelson, and Smith of Michigan.

The committee resumed the consideration of the bill (H. R. 14777), "An act to provide for the control of the floods of the Mississippi River and of the Sacramento River, Cal., and for other purposes."

The CHAIRMAN. The committee will come to order. Senator Newlands had not finished his statement yesterday, and perhaps we had better let him finish it before we hear from the riparian interests. We will hear from the riparian interests after he has finished his statement.

STATEMENT OF UNITED STATES SENATOR FRANCIS G. NEWLANDS, OF NEVADA—Resumed.

Senator NEWLANDS. Pursuant to the suggestion of the chairman, I have prepared, so that it can be printed, a substitute for the so-called Humphreys-Ransdell bill, H. R. 14777, and for the so-called Newlands-Broussard bill, S. 5736, both of which are pending before this committee.

(The bills referred to are here printed in full, as follows:)

[H. R. 14777. SIXTY-FOURTH CONGRESS, FIRST SESSION.]

AN ACT To provide for the control of the floods of the Mississippi River and of the Sacramento River, California, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That for controlling the floods of the Mississippi River and continuing its improvement from the Head of the Passes to the mouth of the Ohio River the Secretary of War is hereby empowered, authorized, and directed to carry on continuously, by hired labor or otherwise, the plans of the Mississippi River Commission heretofore or hereafter adopted, to be paid for as appropriations may from time to time be made by law, not to exceed in the aggregate $45,000,000: *Provided,* That not more than $10,000,000 shall be expended therefor during any one fiscal year.

(a) All money appropriated under authority of this section shall be expended under the direction of the Secretary of War in accordance with the plans, specifications, and recommendations of the Mississippi River Commission, as approved by the Chief of Engineers, for controlling the floods and for the general improvement of the Mississippi River, and for surveys, including the survey from the Head of the Passes to the headwaters of the river, and a survey of the Atchafalaya Outlet so far as may be necessary to determine the cost of protecting its basin from the flood waters of the Mississippi River either by its divorcement from the Mississippi River or by other means, and for salaries, clerical, office, traveling, and miscellaneous expenses of the Mississippi River Commission.

(b) That no money appropriated under authority of this section shall be expended in the construction or repair of any levee unless and until assurances have been given satisfactory to the commission that local interests protected thereby will contribute for such construction and repair a sum which the commission shall determine to be just and equitable, but which shall be not less than one-half of such sum as may have been allotted by the commission for such work: *Provided*, That such contributions shall be expended under the direction of the commission, or in such manner as it may require or approve, but no contribution made by any State or levee district shall be expended in any other State or levee district except with the approval of the authorities of the State or district so contributing.

(c) Any funds which may hereafter be appropriated under authority of this act for improving the Mississippi River between the Head of the Passes and the mouth of the Ohio River, and which may be allotted to levees, may be expended upon any part of said river between the Head of the Passes and Rock Island, Illinois.

(d) No money appropriated under authority of this act shall be expended in payment for any right of way for any levee which may be constructed in cooperation with any State or levee district under authority of this act, but all such rights of way shall be provided free of cost to the United States: *Provided*, That no money paid or expense incurred by any State or levee district in securing such rights of way, or in any temporary works of emergency during an impending flood, or for the maintenance of any levee line, shall be computed as a part of the contribution of such State or levee district toward the construction or repair of any levee within the meaning of paragraph (*b*) of this section.

That the watercourses connected with the Mississippi River to such extent as may be necessary to exclude the flood waters from the upper limits of any delta basin, together with the Ohio River from its mouth to the mouth of the Cache River, may, in the discretion of said commission, receive allotments for improvements now under way or hereafter to be undertaken.

Upon the completion of any levee constructed for flood control under authority of this act, said levee shall be turned over to the levee district protected thereby for maintenance thereafter; but for all other purposes the United States shall retain such control over the same as it may have the right to exercise upon such completion.

SACRAMENTO RIVER, CALIFORNIA.

SEC. 2. That for controlling the floods, removing the débris, and continuing the improvement of the Sacramento River, California, in accordance with the plans of the California Débris Commission, the Secretary of War is hereby authorized and directed to carry on continuously, by hired labor or otherwise, the plan of said commission contained in its report submitted August tenth, nineteen hundred and ten, and printed in House Document Numbered Eighty-one, Sixty-second Congress, first session, as modified by the report of said commission submitted February eighth, nineteen hundred and thirteen, approved by the Chief of Engineers of the United States Army and the Board of Engineers for Rivers and Harbors, and printed in Rivers and Harbors Committee Document Numbered Five, Sixty-third Congress, first session, in so far as said plan provides for the rectification and enlargement of river channels and the construction of wiers, to be paid for as appropriations may from time to time be made by law, not to exceed in the aggregate $5,600,000: *Provided*, That not more than $1,000,000 shall be expended therefor during any one fiscal year.

(a) All money appropriated under authority of this section shall be expended under the direction of the Secretary of War, in accordance with the plans, specifications, and recommendations of the California Débris Commission, as approved by the Chief of Engineers, for the control of floods, removal of débris, and the general improvement of the Sacramento River: *Provided*, That no money shall be expended under authority of this section until assurances have been given satisfactory to the Secretary of War (a) that the State of California will contribute annually for such work a sum equal to such sum as may be expended annually therefor by the United States under authority of this section; (b) that such equal contributions by the State of California will continue annually until the full equal share of the cost of such work shall have been contributed by said State; and (c) that the river levees contemplated in the report of the California Débris Commission, dated August tenth, nineteen hundred and ten, will be constructed to such grade and section and within such time as may be required by said commission: *Provided further*, That said State shall not be required to expend for such work, for any one year, a sum larger than that expended thereon by the United States during the same year: *And provided further*, That the total contributions so required of the State of California shall not exceed in the aggregate $5,600,000.

(b) All money contributed by the State of California, as herein provided, shall be expended under the direction of the California Débris Commission and in such manner as it may require or approve, and no money appropriated under authority of this section shall be expended in the purchase of or payment for any right of way, easement, or land acquired for the purposes of this improvement, but all such rights of way, easements, and lands shall be provided free of cost to the United States: *Provided*, That no money paid or expense incurred therefor shall be computed as a part of the contribution of the State of California toward the work of improvement herein provided for within the meaning of paragraph (a) of this section.

(c) Upon the completion of all works for flood control herein authorized the said works shall be turned over to the State of California for maintenance thereafter; but for all other purposes the United States shall retain such control over the same as it may have the right to exercise upon such completion.

GENERAL PROVISIONS.

SEC. 3. That all the provisions of existing law relating to examinations and surveys and to works of improvement of rivers and harbors shall apply, so far as applicable, to examinations and surveys and to works of improvement relating to flood control. And all expenditures of funds hereafter appropriated for works and projects relating to flood control shall be made in accordance with and subject to the law governing the disbursement and expenditure of funds appropriated for the improvement of rivers and harbors.

All examinations and surveys of projects relating to flood control shall include a comprehensive study of the watershed or watersheds, and the report thereon in addition to any other matter upon which a report is required shall give such data as it may be practicable to secure in regard to (a) the extent and character of the area to be affected by the proposed improvement; (b) the probable effect upon any navigable water or waterway; (c) the possible economical development and utilization of water power; and (d) such other uses as may be properly related to or coordinated with the project. And the heads of the several departments of the Government may, in their discretion, upon the request of the Secretary of War, detail representatives from their respective departments to assist the Engineers of the Army in the study and examination of such water sheds, to the end that duplication of work may be avoided and the various services of the Government economically coordinated therein: *Provided*, That all reports on preliminary examinations hereafter authorized, together with the report of the Board of Engineers for Rivers and Harbors thereon, shall be submitted to the Secretary of War by the Chief of Engineers, with his recommendations, and shall be transmitted by the Secretary of War to the House of Representatives, and are hereby ordered to be printed when so made.

In the consideration of all works and projects relating to flood control which may be submitted to the Board of Engineers for Rivers and Harbors for consideration and recommendation, said board shall, in addition to any other matters upon which it may be required to report, state its opinion as to (a) what Federal interest, if any, is involved in the proposed improvement; (b) what share of the expense, if any, should be borne by the United States; and (c) the advisability of adopting the project.

All examinations and reports which may now be made by the Board of Engineers for Rivers and Harbors upon request of the Committee on Rivers and plans, specifications, and recommendations of the Mississippi River Commission, as approved by the Chief of Engineers, for controlling the floods and for the general improvement of the Mississippi River, and for surveys, including the survey from the Head of the Passes to the headwaters of the river, and a survey of the Atchafalaya Outlet so far as may be necessary to determine the cost of protecting its basin from the flood waters of the Mississippi River either by its divorcement from the Mississippi River or by other means, and for salaries, clerical, office, traveling, and miscellaneous expenses of the Mississippi River Commission.

(b) That no money appropriated under authority of this section shall be expended in the construction or repair of any levee unless and until assurances have been given satisfactory to the commission that local interests protected thereby will contribute for such construction and repair a sum which the commission shall determine to be just and equitable, but which shall be not less than one-half of such sum as may have been allotted by the commission for such work: *Provided*, That such contributions shall be expended under the direction of the commission, or in such manner as it may require or approve, but no contribution made by any State or levee district shall be expended in any other State or levee district except with the approval of the authorities of the State or district so contributing.

(c) Any funds which may hereafter be appropriated under authority of this act for improving the Mississippi River between the Head of the Passes and the mouth of the Ohio River, and which may be allotted to levees, may be expended upon any part of said river between the Head of the Passes and Rock Island, Illinois.

(d) No money appropriated under authority of this act shall be expended in payment for any right of way for any levee which may be constructed in cooperation with any State or levee district under authority of this act, but all such rights of way shall be provided free of cost to the United States: *Provided*, That no money paid or expense incurred by any State or levee district in securing such rights of way, or in any temporary works of emergency during an impending flood, or for the maintenance of any levee line, shall be computed as a part of the contribution of such State or levee district toward the construction or repair of any levee within the meaning of paragraph (*b*) of this section.

That the watercourses connected with the Mississippi River to such extent as may be necessary to exclude the flood waters from the upper limits of any delta basin, together with the Ohio River from its mouth to the mouth of the Cache River, may, in the discretion of said commission, receive allotments for improvements now under way or hereafter to be undertaken.

Upon the completion of any levee constructed for flood control under authority of this act, said levee shall be turned over to the levee district protected thereby for maintenance thereafter; but for all other purposes the United States shall retain such control over the same as it may have the right to exercise upon such completion.

SACRAMENTO RIVER, CALIFORNIA.

SEC. 2. That for controlling the floods, removing the débris, and continuing the improvement of the Sacramento River, California, in accordance with the plans of the California Débris Commission, the Secretary of War is hereby authorized and directed to carry on continuously, by hired labor or otherwise, the plan of said commission contained in its report submitted August tenth, nineteen hundred and ten, and printed in House Document Numbered Eighty-one, Sixty-second Congress, first session, as modified by the report of said commission submitted February eighth, nineteen hundred and thirteen, approved by the Chief of Engineers of the United States Army and the Board of Engineers for Rivers and Harbors, and printed in Rivers and Harbors Committee Document Numbered Five, Sixty-third Congress, first session, in so far as said plan provides for the rectification and enlargement of river channels and the construction of wiers, to be paid for as appropriations may from time to time be made by law, not to exceed in the aggregate $5,600,000: *Provided*, That not more than $1,000,000 shall be expended therefor during any one fiscal year.

(a) All money appropriated under authority of this section shall be expended under the direction of the Secretary of War, in accordance with the plans, specifications, and recommendations of the California Débris Commission, as approved by the Chief of Engineers, for the control of floods, removal of débris, and the general improvement of the Sacramento River: *Provided*, That no money shall be expended under authority of this section until assurances have been given satisfactory to the Secretary of War (a) that the State of California will contribute annually for such work a sum equal to such sum as may be expended annually therefor by the United States under authority of this section; (b) that such equal contributions by the State of California will continue annually until the full equal share of the cost of such work shall have been contributed by said State; and (c) that the river levees contemplated in the report of the California Débris Commission, dated August tenth, nineteen hundred and ten, will be constructed to such grade and section and within such time as may be required by said commission: *Provided further*, That said State shall not be required to expend for such work, for any one year, a sum larger than that expended thereon by the United States during the same year: *And provided further*, That the total contributions so required of the State of California shall not exceed in the aggregate $5,600,000.

(b) All money contributed by the State of California, as herein provided, shall be expended under the direction of the California Débris Commission and in such manner as it may require or approve, and no money appropriated under authority of this section shall be expended in the purchase of or payment for any right of way, easement, or land acquired for the purposes of this improvement, but all such rights of way, easements, and lands shall be provided free of cost to the United States: *Provided*, That no money paid or expense incurred therefor shall be computed as a part of the contribution of the State of California toward the work of improvement herein provided for within the meaning of paragraph (a) of this section.

(c) Upon the completion of all works for flood control herein authorized the said works shall be turned over to the State of California for maintenance thereafter; but for all other purposes the United States shall retain such control over the same as it may have the right to exercise upon such completion.

GENERAL PROVISIONS.

Sec. 3. That all the provisions of existing law relating to examinations and surveys and to works of improvement of rivers and harbors shall apply, so far as applicable, to examinations and surveys and to works of improvement relating to flood control. And all expenditures of funds hereafter appropriated for works and projects relating to flood control shall be made in accordance with and subject to the law governing the disbursement and expenditure of funds appropriated for the improvement of rivers and harbors.

All examinations and surveys of projects relating to flood control shall include a comprehensive study of the watershed or watersheds, and the report thereon in addition to any other matter upon which a report is required shall give such data as it may be practicable to secure in regard to (a) the extent and character of the area to be affected by the proposed improvement; (b) the probable effect upon any navigable water or waterway; (c) the possible economical development and utilization of water power; and (d) such other uses as may be properly related to or coordinated with the project. And the heads of the several departments of the Government may, in their discretion, upon the request of the Secretary of War, detail representatives from their respective departments to assist the Engineers of the Army in the study and examination of such water sheds, to the end that duplication of work may be avoided and the various services of the Government economically coordinated therein: *Provided*, That all reports on preliminary examinations hereafter authorized, together with the report of the Board of Engineers for Rivers and Harbors thereon, shall be submitted to the Secretary of War by the Chief of Engineers, with his recommendations, and shall be transmitted by the Secretary of War to the House of Representatives, and are hereby ordered to be printed when so made.

In the consideration of all works and projects relating to flood control which may be submitted to the Board of Engineers for Rivers and Harbors for consideration and recommendation, said board shall, in addition to any other matters upon which it may be required to report, state its opinion as to (a) what Federal interest, if any, is involved in the proposed improvement; (b) what share of the expense, if any, should be borne by the United States; and (c) the advisability of adopting the project.

All examinations and reports which may now be made by the Board of Engineers for Rivers and Harbors upon request of the Committee on Rivers and

Harbors relating to works or projects of navigation shall in like manner be made upon request of the Committee on Flood Control on all works and projects relating to flood control.

Sec. 4. That the salary of the civilian members of the Mississippi River Commission shall hereafter be $5,000 per annum.

Passed the House of Representatives May 17, 1916.

[S. 5736. SIXTY-FOURTH CONGRESS, FIRST SESSION.]

A BILL To promote interstate commerce, agriculture, and the general welfare by providing for the development and control of waterways and water resources, for water conservation, for flood control, prevention, and protection; for the application of flood waters to beneficial uses; and for cooperation in such work with States and other agencies, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the sum of $60,000,000, to be apportioned as hereinafter provided, is hereby reserved, set aside, appropriated, and made available until expended, out of any moneys not otherwise appropriated, as a special fund in the Treasury, to be known as the "river-regulation fund," to be used to promote interstate commerce by the development and improvement of the rivers and waterways of the United States and their connections with the Great Lakes and with each other, and by the coordination of and cooperation between rail and water routes and transportation, and the establishment and maintenance of adequate terminal and transfer facilities and systems, and their maintenance, improvement, and protection, and by the making of examinations and surveys and by the construction of engineering and other works and projects for the regulation and control of the flow of rivers and their tributaries and source streams, and the standardization of such flow, and by the maintenance of navigable stages of water at all seasons of the year in the waterways of the United States, and by preventing silt and sedimentary material from being carried into and deposited in waterways, channels, and harbors, and by the conservation, development, and utilization of the water resources of the United States, and by flood prevention and protection, through the establishment, construction, and maintenance of natural and artificial reservoirs and detention basins for water storage and control, and levees, revetments and other bank-protective works, spillways, wasteweirs, wasteways, by-passes, controlled outlets, and flood-control works of every nature and kind, and the protection of watersheds from denudation, erosion, and surface wash, and from forest fires, and the maintenance and extension of woodland and other protective cover thereon, and the reclamation of swamp and overflow lands and arid lands, and the building of drainage and irrigation works in order that the flow of rivers shall be regulated and controlled not only through the use of flood waters for irrigation on the upper tributaries, but also through controlling them in fixed and established channels in the lower valleys and plains and by doing all things necessary to provide for any and all beneficial uses of water that will contribute to its conservation or storage in the ground or in surface reservoirs as an aid to the regulation or control of the flow of rivers, and by acquiring, by purchase, condemnation, or otherwise, holding, using, leasing, hiring, and transferring by appropriate deed lands and any other property that may be needed for the aforesaid purposes, or which it may be deemed advisable to dispose of, and by doing such other things as may be specified in this act or necessary to the accomplishment of the purposes thereof, and by securing the cooperation therein of States, municipalities, and other local agencies, as hereinafter set forth, and for the payment of all expenditures provided for in this act.

The aforesaid sum of $60,000,000, appropriated as hereinbefore provided, shall be apportioned for expenditure under this act as follows:

(a) $25,000,000 to the Illinois River and its watershed and to the Mississippi River from the mouth of the Illinois to the Head of the Passes, including the Atchafalaya River as one of the mouths of the Mississippi River, to be expended for the improvement of the Illinois River and for continuing the improvement of the Mississippi River from the Head of the Passes to the mouth of the Illinois River, for the control of floods thereon, and the establishment of a waterway from the Lakes to the Gulf; (b) $5,000,000 to the watersheds of the Ohio River and its tributaries, for the control of floods thereon, and the consequent improvement of navigation; (c) $5,000,000 to the watershed of the Mississippi River above the mouth of the Illinois River; (d) $5,000,000 to the watersheds of the Missouri River and all other tributaries of the Mississippi River, except the Ohio, from the mouth of the Illinois River to the Gulf and all rivers draining into the Gulf of Mexico west of the Mississippi River; (e) $5,000,000 to the watersheds of the rivers draining into Canada, the Great Lakes, and the Atlantic Ocean and rivers draining into the Gulf of Mexico east of the Mississippi River; (f) $5,000,000 to the watersheds of all the rivers draining into the Pacific Ocean in Oregon and Washington, including the Columbia River watershed; (g) $5,000,000 to the watersheds of the rivers draining into the Sacramento and San Joaquin Valleys and into the Pacific Ocean north of Santa Barbara, in California; (h) $5,000,000 to the watersheds of all other rivers in California and the Great Inland Basin and the Colorado River.

NATIONAL WATERWAYS COUNCIL.

SEC. 2. That a National Waterways Council, hereinafter called the council, is hereby created, consisting of the President of the United States as chairman, the Secretary of War, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, and the chairman of the Water Control Board, to be appointed as hereinafter provided.

The council shall have authority to direct and control all proceedings and operations and all things done or to be done under this act, and to establish all rules and regulations which may, in their judgment, be necessary to carry into effect such direction and control consistent with the provisions of this act and with existing law and with any provisions which Congress may from time to time enact.

All plans and estimates prepared by the Water Control Board, as hereinafter provided, which contemplate or provide for expenditures from the river regulation fund shall be submitted to the council for final approval before any of the expenditures therein provided for or contemplated are authorized or made or any construction work undertaken or contract let under or in pursuance of such plans: *Provided*, That in case of an emergency the chairman of the Water Control Board shall have full power to act, and shall report in detail his action in every case.to the council at its next meeting after his atcion.

WATER CONTROL BOARD.

SEC. 3. That to assist in carrying out the purposes aforesaid the council may utilize the various agencies of the Government, and there is hereby created a water control board, hereinafter called the board, which shall consist of a chairman, to be appointed by the council, and four assistant secretaries, to be appointed as hereinafter provided, and such additional members as the council may from time to time appoint. The chairman of the board shall receive a salary of $12,000 per annum, each assistant secretary aforesaid shall receive a salary of $10,000 per annum, and said additional members of the board such salaries as the council may from time to time fix. Subject to the direction and control of the council as to general policy and procedure, it shall be the duty of the board to ascertain in detail the work in progress and obtain plans, recommendations, and estimates of the work contemplated in the general field of water conservation, control, and utilization by the various agencies of the Government, States, counties, municipalities, districts, communities, corporations, associations, and individuals, and on the basis of such information and the results obtained by its own surveys and investigations to prepare for the consideration of the council a general and comprehensive program of water and waterways conservation, regulation, development, and utilization, extending through a number of years, with comprehensive general plans for each watershed, treating the entire watershed of each river as a unit, and with specific projects, plans, estimates, and recommendations, involving independent work by the United States and the combining of resources and energies of the various public and private agencies aforesaid; to coordinate and bring into conference the various agencies of the Government; and to examine, compare, adjust, allot, assign, and supervise their work, to the end that duplication may be avoided and the highest efficiency obtained; by agreement to assign to the various cooperating agencies the work to be done by them within their respective spheres; to accept, on behalf of the United States, from such agencies contributions of money and property of any kind to be used for carrying out the purposes authorized by this act; to make field inspection of all work done or contemplated under this act by the Government and its cooperating agencies; and to employ such engineers, transportation experts, experts in water development, constructors, and other employees, and to construct such buildings and works as may be necessary for those purposes. The board is hereby authorized to expend from the sums herein provided such amounts as may be necessary for services of employees in the city of Washington, District of Columbia, and elsewhere; to pay therefrom such sums as may be necessary for office accommodations in the city of Washington, District of Columbia, and elsewhere, and to purchase such law books, books of reference, periodicals, engineering, statistical, and professional publications as may be needed. Contributions received under this section shall be used by the board, under the direction of the council, for carrying out the purposes of this act, and money so received shall be paid into the river regulation fund herein created. Subject to the approval of the council, the board is authorized to enter into such contracts or carry on by hired labor or otherwise such work as may be necessary for carrying out the purposes of this act, within the limits of appropriations made or authorized by this act or appropriations or contributions which shall be hereafter made or authorized from time to time, or as may be necessary for executing projects under this act within the respective limits of cost thereof approved by the Congress, the funds for which shall have been provided by the Secretary of the Treasury in accordance with the authority conferred by this act. Subject to the approval of the council the board may also employ the various agencies of the Government in carrying out such purposes or executing such projects.

COOPERATION WITH STATES AND OTHER AGENCIES.

SEC. 4. That the board shall, in all cases where possible and practicable, encourage, promote, and endeavor to secure the cooperation of States, municipalities, public and quasi public corporations, towns, counties, districts, communities, persons, and associations in the carrying out of the purposes and objects of this act, and in making the investigations and doing all coordinative and constructive work provided for herein; and it shall in each case endeavor to secure the financial cooperation of States and of such local authorities, agencies, and organizations to such extent and in such amounts as the council shall determine to be a just and equitable apportionment of work, costs, and benefits under all the circumstances in each case; and it shall negotiate and perfect arrangements and plans for the apportionment of work, cost, and benefits, according to the jurisdiction, powers, rights, and benefits of each, respectively, and with a view to assigning to the United States such portion of such development, promotion, regulation, and control as can be properly undertaken by the United States by virtue of its power to regulate interstate and foreign commerce and promote the general welfare, and by reason of its proprietary interest in the public domain, and to the States, municipalities, communities, corporations, and individuals such portion as properly belongs to their jurisdiction, rights, and interests, and with a view to properly apportioning costs and benefits, and with a view to so uniting the plans and works of the United States within its jurisdiction, and of the States and municipalities, respectively, within their jurisdictions, and of corporations, communities, and individuals within their respective powers and rights, as to secure the highest development and utilization of the waterways and water resources of the United States.

APPOINTMENT OF WATER-CONTROL BOARD.

SEC. 5. That each head of a department named in this act is authorized to appoint, with the approval of the council, for service as a member of the board, a highly qualified representative, who shall be an assistant secretary in the department in which he is appointed; shall devote his time primarily to the work authorized by this act; shall have, subject to the direction of the head of the department, such general supervision and control as may be necessary for the purposes of this act of the agencies within the department engaged upon such work; shall serve during good service and behavior; and shall be removable by the head of the department only for good cause.

RIVER-REGULATION FUND.

SEC. 6. That no sums shall be paid out of the river-regulation fund except on vouchers signed by the chairman of the board or by an official designated by him in writing, drawn on the Secretary of the Treasury. To provide for carrying out the projects formulated under this act, which involve expenditures in excess of the $60,000,000 herein appropriated to the river-regulation fund, the appropriation hereafter to the credit of said fund of such sums as may be necessary is hereby authorized. At any time that the Secretary of the Treasury shall determine it to be necessary or advisable, in order to provide all or any part of the appropriation made or authorized by this act or which may be hereafter made or authorized or to provide revenues to execute a project under this act, which shall have been approved by the Congress, he may issue and sell, or use as a means of borrowing money, bonds in the necessary amount, in accordance with the provisions of the act of August fifth, nineteen hundred and nine (Thirty-sixth Statutes at Large, pages eleven and one hundred and seventeen), the act of February fourth, nineteen hundred and ten (Thirty-sixth Statutes at Large, page one hundred and ninety-two), and the act of March second, nineteen hundred and eleven (Thirty-sixth Statutes at Large, page one thousand and thirteen). The sums appropriated or provided by the Secretary of the Treasury pursuant to this section shall be paid into the river-regulation fund and shall be available until expended and paid out as provided for in this act. All moneys received in connection with any operations under this act as well as from the sales of materials utilized and any condemned property, shall be covered into the " river-regulation fund " and be available for expenditure therefrom. It is the intent and purpose of this act to authorize and empower the council and the board and their officers, agents, and employees to do all necessary acts and things in addition to those specially authorized in this act to accomplish the purposes and objects hereof.

(MR. NEWLANDS'S SUBSTITUTE FOR H. R. 14777, KNOWN AS THE HUMPHREYS-RANSDELL BILL, AND SENATE BILL 5736, KNOWN AS THE NEWLANDS-BROUSSARD BILL.)

A BILL To promote interstate commerce, agriculture, and the general welfare by providing for the development and control of waterways and water resources; for water conservation; for flood control, prevention, and protection; for the application of flood waters to beneficial uses; and for cooperation in such work with States and other agencies; for the control of the floods of the Mississippi River and the Sacramento River, California; and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That a commission to be known as the River Regulation Commission, consisting of the Secretary of War, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, and three additional members to be appointed by the President of the United States from the active or retired list of the Engineer Corps of the Army, or other Government services, or from civil life, whose compensation shall be fixed by him, one of whom shall be designated by the President as chairman, is hereby created and authorized, under such rules and regulations as it may adopt, to bring into coordination and cooperation the various engineering, scientific, and constructive services, bureaus, boards, and commissions of the several governmental departments of the United States that relate to the study, development, or control of waterways and water resources and subjects related thereto, or to the development and regulation of interstate and foreign commerce, with a view to uniting such services in investigating, with respect to all watersheds in the United States, questions relating to the development, improvement, regulation, and control of navigation as a part of interstate and foreign commerce, including therein the related questions of irrigation, drainage, forestry, arid and swamp land reclamation, clarification of streams, regulation of flow, control of floods, utilization of water power, prevention of soil erosion and waste, storage and conservation of water for agricultural, industrial municipal, and domestic uses, cooperation of railways and waterways, and promotion of terminal and transfer facilities and sites, and for the purpose of securing the necessary data and formulating, for consideration and report to Congress, comprehensive plans for the development of the waterways and water resources of the United States for every useful purpose.

In forming these plans consideration shall be given to projects which are to be undertaken either independently by the United States or by cooperation between the United States and the several States, municipalities, communities, corporations, and individuals within the jurisdiction, powers, and rights of each, respectively, and with a view to assigning to the United States such portion of such development, promotion, regulation, and control as can be properly undertaken by it, and to the States, municipalities, communities, corporations, and individuals such portion as properly belongs to their respective jurisdictions, rights, and interests, and with a view to properly apportioning costs and benefits, and with a view to so uniting and executing the plans and works of the United States within its jurisdiction and of the States and municipalities, respectively, within their jurisdictions, and of corporations, communities, and individuals within their respective powers and rights, and to secure the highest development and utilization of the waterways and resources of the United States.

The River Regulation Commission is authorized to employ such engineers, transportation experts, experts in water development and utilization, and constructors of eminence as it may deem necessary to carry out the purposes of this section, and in order to defray the expenses made necessary by the provisions of this section there is hereby authorized to be appropriated such sums as Congress may hereafter determine, and the sum of $1,000,000 is hereby appropriated, out of any money in the Treasury not otherwise appropriated, available until expended, to be paid out upon warrants drawn on the Secretary of the Treasury by the chairman of said commission.

The commission shall have the power to rent offices and purchase books, maps, and office equipment and to employ such clerical, legal, engineering, artistic, and expert service as it may deem advisable.

The Commission of Fine Arts shall be consulted regarding the artistic features of all structures, water fronts, and improvements contemplated by such commission.

MISSISSIPPI RIVER.

Sec. 2. That for controlling the floods of the Mississippi River and continuing its improvement from the Head of the Passes to the mouth of the Ohio River the Secretary of War is hereby empowered, authorized, and directed to carry on continuously, by hired labor or otherwise, the plans of the Mississippi River Commission heretofore or hereafter adopted, to be paid for as appropriations may from time to time be made by law, not to exceed in the aggregate $45,000,000: *Provided*, That not more than $10,000,000 shall be expended therefor during any one fiscal year.

(a) All money appropriated under authority of this section shall be expended under the direction of the Secretary of War in accordance with the plans, specifications, and recommendations of the Mississippi River Commission as approved by the Chief of Engineers, for controlling the floods and for the general improvement of the Mississippi River, and for surveys, including the survey from the Head of the Passes to the headwaters of the river, and a survey of the Atchafalaya River so far as may be necessary to determine the cost of protecting its basin from the flood waters of the Mississippi River either by its divorcement from the Mississippi River or by the construction of levees, bank revetments, spillways, and such other improvements and enlargements as may be approved by the Mississippi River Commission, under the direction of the Secretary of War: *Provided*, That hereafter the Mississippi River Commission shall exercise the same jurisdiction over the Atchafalaya River that said commission now exercises over the Mississippi River under the law, and for salaries, clerical, office, traveling, and miscellaneous expenses of the Mississippi River Commission.

(b) That no money appropriated under authority of this section shall be expended in the construction or repair of any levee unless and until assurances have been given satisfactory to the commission that local interests protected thereby will contribute for such construction and repair a sum which the commission shall determine to be just and equitable but which shall be not less than one-half of such sum as may have been allotted by the commission for such work: *Provided*, That such contributions shall be expended under the direction of the commission, or in such manner as it may require or approve, but no contribution made by any State or levee district shall be expended in any other State or levee district except with the approval of the authorities of the State or district so contributing.

(c) Any funds which may hereafter be appropriated under authority of this act for improving the Mississippi River between the Head of the Passes and the mouth of the Ohio River, and which may be allotted to levees, may be expended upon any part of said river between the Head of the Passes and Rock Island, Illinois.

(d) No money appropriated under authority of this section shall be expended in payment for any right of way for any levee which may be constructed in cooperation with any State or levee district under authority of this section, but all such rights of way shall be provided free of cost to the United States: *Provided*, That no money paid or expense incurred by any State or levee district in securing such rights of way, or in any temporary works of emergency during an impending flood, or for the maintenance of any levee line, shall be computed as a part of the contribution of such State or levee district toward the construction or repair of any levee within the meaning of paragraph (b) of this section.

That the watercourses connected with the Mississippi River to such extent as may be necessary to exclude the flood waters from the upper limits of any delta basin, together with the Ohio River from its mouth to the mouth of the Cache River, may, in the discretion of said commission, receive allotments for improvements now under way or hereafter to be undertaken.

Upon the completion of any levee constructed for flood control under authority of this section, said levee shall be turned over to the levee district protected thereby for maintenance thereafter; but for all other purposes the United States shall retain such control over the same as it may have the right to exercise upon such completion.

SACRAMENTO RIVER, CALIFORNIA.

SEC. 3. That for controlling the floods, removing the débris, and continuing the improvement of the Sacramento River, California, in accordance with the plans of the California Débris Commission, the Secretary of War is hereby authorized and directed to carry on continuously, by hired labor or otherwise, the plan of said commission contained in its report submitted August tenth, nineteen hundred and ten, and printed in House Document Numbered Eighty-one, Sixty-second Congress, first session, as modified by the report of said commission submitted February eighth, nineteen hundred and thirteen, approved by the Chief of Engineers of the United States Army and the Board of Engineers for Rivers and Harbors, and printed in Rivers and Harbors Committee Document Numbered Five, Sixty-third Congress, first session, in so far as said plan provides for the rectification and enlargement of river channels and the construction of weirs, to be paid for as appropriations may from time to time be made by law, not to exceed in the aggregate $5,600,000: *Provided*, That not more than $1,000,000 shall be expended therefor during any one fiscal year.

(a) All money appropriated under authority of this section shall be expended under the direction of the Secretary of War, in accordance with the plans, specifications, and recommendations of the California Débris Commission, as approved by the Chief of Engineers, for the control of floods, removal of débris, and the general improvement of the Sacramento River: *Provided*, That no money shall be expended under authority of this section until assurances have been given satisfactory to the Secretary of War (a) that the State of California will contribute annually for such work a sum equal to such sum as may be expended annually therefor by the United States under authority of this section; (b) that such equal contributions by the State of California will continue annually until the full equal share of the cost of such work shall have been contributed by said State; and (c) that the river levees contemplated in the report of the California Débris Commission, dated August tenth, nineteen hundred and ten, will be constructed to such grade and section and within such time as may be required by said commission: *Provided further*, That said State shall not be required to expend for such work, for any one year, a sum larger than that expended thereon by the United States during the same year: *And provided further*, That the total contributions so required of the State of California shall not exceed in the aggregate $5,600,000.

(b) All money contributed by the State of California, as herein provided, shall be expended under the direction of the California Débris Commission and in such manner as it may require or approve, and no money appropriated under authority of this section shall be expended in the purchase of or payment for any right of way, easement, or land acquired for the purposes of this improvement, but all such rights of way, easements, and lands shall be provided free of cost to the United States: *Provided*, That no money paid or expense incurred therefor shall be computed as a part of the contribution of the State of California toward the work of improvement herein provided for within the meaning of paragraph (a) of this section.

(c) Upon the completion of all works for flood control under authority of this section the said works shall be turned over to the State of California for maintenance thereafter; but for all other purposes the United States shall retain such control over the same as it may have the right to exercise upon such completion.

SEC. 4. That the salary of the civilian members of the Mississippi River Commission shall hereafter be $5,000 per annum.

Senator NEWLANDS. A hearing was had at the last session on the bill S. 5736, but unfortunately the members of this committee were so busy with pending legislation that the only member of the committee who was able to attend the hearing was Senator Ransdell, the chairman of the subcommittee, and he is now ill.

This substitute bill, as I understand it—I have not been able as yet to show it to Senator Ransdell, or communicate with him regarding it, although I have sent him the bill—represents our understanding at the last session, an understanding that was submitted to the Secretaries of War, Commerce, Interior, and Agriculture, and was approved by them, and an understanding which we hoped to put through at the end of the last session, but time would not permit. I have no personal assurances that this bill is satisfactory to Mr. Humphreys of Mississippi, but I understood that it was satisfactory to him and to other friends of the House measure. But I see that Senator Vardaman shakes his head, so I presume I am not correct.

Senator VARDAMAN. He told me it was not.

Senator NEWLANDS. Very well. If you will permit me, I will put right into the record now a succinct statement of the history of this legislation, referring only to various reports from commissions, members of the Cabinet, and the action of leading bodies, without reading to you, but with leave, if you will permit, to insert in the record. I would also like to insert in the record the various bills that have been introduced by me during the last 10 years upon this subject, each one of which perhaps varies in some degree from the other, as a result of communication with members of the Cabinet and with the views of the particular administration that was then in power, and it may be that, in looking over this substitute, you may, by reference to these other bills, get some valuable suggestions for perfecting this measure, for, I assure you, in its various phases the so-called Newlands bill is an evolution of the best thought of the men who have been giving continuous attention to this subject.

Now, by way of stating that history, which will be very brief, I would like to put in some extracts from a speech made by me December 17, 1907, upon two bills, one, Senate bill 500, providing for the appointment of an inland waterway commission for the development of inland waterways of the country, and another, Senate bill 499, which I stated was introduced by me two years before, for the national incorporation of rail, river, and ocean carriers. I will state that that speech, and the bills upon which it was based, were introduced before a report was made by the Inland Waterways Commission, of which I was a member, and of which Mr. Theodore E. Burton was the chairman, and that the report subsequently made by that commission was substantially upon the lines of Senate bill 500, and that the bill itself, after the Inland Waterways Commission's report was made, was approved by that commission, including Mr. Burton, as to all its details, except as to the appropriations, which were very large and which I intended should be large, and with reference to which the commission expressed no view, leaving that to the wisdom of Congress. That report of the commission was filed in 1907, and there were various constructions of the bill, which was approved by the commission and by the different men connected with the Roosevelt administration. Mr. Roosevelt himself was strongly in favor of it. Mr. Taft's Secretary of War presented a report to this committee in which he approved all the essential features of the bill and declared it was necessary to promote a waterway measure upon the lines of that bill. He expressed no opinion, however, as to the amount of the appropriation.

I will ask to put in insertions from that report. Subsequently Mr. Stimson became Secretary of War. I would like to put in the record a letter from him, in which he indorsed every substantial feature of that bill.

Then came the Wilson administration. Every essential of this so-called Newlands-Broussard bill had been affirmed in two successive national Democratic platforms, specifically calling for coordination of services, cooperation of the Nation with the States, for an ample fund for the development of our rivers from source to mouth for every useful purpose, including not only navigation but the development of waterway power and reclamation of arid and swamp land, intensive cultivation, development of forests, etc.

Mr. Wilson appointed a committee, consisting of the Secretaries of War, Commerce, Interior, and Agriculture, and asked them to look into this scheme of legislation, and the result was that they addressed a letter to the President, which I will insert in the record, in which they took up the whole question and practically called for—without referring to the bill itself—everything that was contained in this bill which I had been urging, without, however, insisting upon the very large appropriations which my bill calls for. The President sent that communication to me and to Mr. Humphreys, of the House, whilst the House was considering a flood-control bill through its Flood Control Committee. I and my friends appeared before the House and presented and asked for the Newlands-Broussard bill. They reported, however, simply a specific measure for the development and regulation of the lower Mississippi and of the Sacramento River, with some general provisions which, in my judgment, were not at all adequate to cover investigation of smaller projects.

When the flood-control bill came to the Senate I opposed it, and, finally, Senator Ransdell and myself came to a compromise, under which it was agreed that a substitute should be urged in the Senate, which should cover the general system provided for by my bill, with an appropriation of something like a million dollars for plans and investigation, and should also cover the Mississippi and Sacramento projects as approved projects under the general scheme. In this way it is proposed to accomplish practically a consolidation of the Humphreys bill with the Newlands-Broussard bill. This agreement was reached after consultation with the Cabinet committee appointed by the President, and had their concurrence.

I received a letter from the Secretary of War this morning, and he confirms my recollection regarding it and stated he would be glad to appear before the committee at its convenience. Just now he is with the Military Committee.

In the report which I made from this committee in 1913, in which I was permitted by the committee—I was then a member of the committee—that was the Sixty-second Congress, third session, report 1339—to give the history of this measure and insert in it numerous editorials from the most prominent newspapers of the country, approving of the principle of this bill; and I also introduced there the resolutions by numerous chambers of commerce, from the Philadelphia Board of Trade west, approving of the measure, and also resolutions of drainage congresses, waterway congresses, etc., approving it. I will, with your permission, put into the record extracts from that report. That closes my statement regarding the history of the bill.

The CHAIRMAN. Are there copies of that report available?

Senator NEWLANDS. Oh, yes; they are here.

The CHAIRMAN. Are they available to a sufficient extent, without reprinting that?

Senator NEWLANDS. I do not know about that. It might be well to have it reprinted in connection with the hearing.

The CHAIRMAN. It is so ordered.

(Senate report 1339, Sixty-second Congress, third session, will be found printed in full, as an appendix, on p. 39.)

Senator NEWLANDS. Now, I just wish to say a few words regarding our purpose. I assume that everybody is dissatisfied with the existing conditions of waterway development. The country is dissatisfied; Congress is dissatisfied: and we all want a better system. We all realize that we must not only bring rail, river, and ocean transportation into coordination so as to produce a cheap system of inland and foreign transportation in the interest of our commerce, but that we must also conserve these waters, which are great producers of wealth and at the same time, if neglected, great destroyers of wealth. In the southern and lower portions of these rivers they are destroyers of wealth, and in the upper reaches, the sources, they are, if properly handled, creators of wealth; and it is evident that if we can get back a part of the total expenditures necessary to perfect these streams for navigation by putting the waters in these rivers to some beneficial use on their way from their sources to the oceans and bays and gulfs, we, to that extent, diminish the cost of the transportation enterprise to the people of the United States.

Some ideas can be got of the tremendous cost of meeting the requirements of the country for transportation during the next 10 years by the statements of Mr. Hill before his death and by the statement of Mr. Thom before our Joint Committee on Interstate Commerce recently, to the effect that it will be necessary, in order to meet the future requirements of the country to expend a billion and a quarter dollars annually in the development of our railways—a billion and a quarter dollars annually.

Senator BANKHEAD. For the development of our rivers?

Senator NEWLANDS. Oh, no; for the development of our railways—in improving and extending them. Now, the railways have been expending six or seven hundred millions annually in the last

10 years. They tell us that the facilities are inadequate, that they have difficulty in negotiating their securities, that the public are no longer investing in their securities, and they are appealing to us now to establish a system that will inspire confidence in the public in these securities.

Senator **Nelson**. You can only do that, Senator, by regulating the issuance of stock. That difficulty has grown out of stock watering.

Senator **Newlands**. That is one of the difficulties—one of the questions—which we are considering now in our committee.

Senator **Vardaman**. That question of watering stock has nothing to do with this question of flood control.

Senator **Nelson**. They will need the flood protection.

Senator **Newlands**. I call your attention to the gigantic sum that is required to perfect our rail transportation system. Now, why is such a gigantic sum needed for our purpose? What is the congestion of rail transportation due to? It is due to the cheap and bulky traffic they are obliged to carry, and which they carry to the same degree in no other civilized country of the world, the waterways being mainly employed for those kinds of traffic in Germany, in Russia, in France, and in Austria.

Senator **Kenyon**. That has been brought about by the mishandling of funds by the officers of railroads.

Senator **Newlands**. Undoubtedly there have been great abuses in the past, which are admitted with perfect candor by Mr. Thom, who has made the most candid statement before our committee that I have ever heard made.

Senator **Kenyon**. Are those hearings printed?

Senator **Newlands**. Yes; and they are very interesting. They show a state of mind never shown before, and indicate that they desire to submit to regulation, desire to cut out the abuses in every way, and to submit to the principle of regulation, including the regulation of railway securities.

Senator **Nelson**. Does not that indicate the adoption of the principle of depriving the States of their regulation, and that they desire to get it under Federal control?

Senator **Newlands**. Let us not drift on to that subject, Senator. I simply say that this is a matter that is being very ably discussed on both sides—the question of how we can harmonize State and National regulation to the benefit of transportation.

Senator **Bankhead**. Your suggestion a while ago, Senator, was that one of the troubles of railroad transportation was the carrying of bulky and heavy traffic.

Senator **Newlands**. Yes.

Senator **Bankhead**. Can you tell the committee why it is that the rivers, improved and navigable rivers, have lost all that traffic, and that it is being carried by the railroads?

Senator **Newlands**. Our rivers have not been improved.

Senator **Bankhead**. You take the Mississippi River——

Senator **Vardaman**. From Cairo to New Orleans there is no question about navigation on the Mississippi River.

Senator **Newlands**. There is no question about navigation on the lower Mississippi River. But there is no traffic on the river. Why is that? Why is it, gentlemen? I will tell you why it is: These rivers have not been developed. You say they have been developed from Cairo down to where nagivation terminates. That is so. But in order to mak usable the waterways in this country you must have continued and continuous development. You can not take stretches of one, two, three, or five hundred miles long in different parts of a great stream, with numerous tributaries like the Mississippi, and develop those stretches and say that the river is developed. You can not do that any more than you can take a stretch of, say, fifteen hundred miles of railway, and build a track at different places, one, two three, four, or five hundred miles long, and say that you have a railroad. It is not right to say that because river transportation has not been developed river transportation is a failure. If you have 10 miles that is undeveloped, just the same as if you have 10 miles of a railroad system that is without rails, you can not say that transportation is a failure either in the case of the river or in the case of the railroad.

Senator VARDAMAN. The bulky freight is assembled at St. Louis, and there is no reason why it should not go down the Mississippi River for distribution to the American people in the Southern States, in the southern part of the Republic, and for transportation across the ocean. I do not see how perfecting the Missouri River north of St. Louis would increase the freight from St. Louis to New Orleans.

Senator NEWLANDS. I think that view is incorrect.

Senator VARDAMAN. You know it is not used.

Senator NEWLANDS. I promised to put this statement in the record very briefly, and I want to get it in, because the subject is a very important one; but your questions are leading me off.

Senator BANKHEAD. I withdraw my question.

The CHAIRMAN. Let us go on.

Senator VARDAMAN. I will withdraw mine.

Senator NEWLANDS. I will be glad to take up those questions on the floor and discuss them. But we have not the time here.

We have never yet perfected our rivers as Germany has perfected hers, as France has perfected hers, as Austria has perfected hers, and even as Russia has perfected hers. We have worked on our rivers in an ineffective way, just the same as if we had worked on the railway and had left out all facilities for handling the freight, such as transfer facilities, leaving out a station here, leading out sidetracks, even leaving out rails for spaces of a mile or two miles at a time. You can not expect to have an efficient transportation system under those conditions, neither can you expect to have an efficient transportation system by water if you develop at points only without developing the whole system.

Our purpose is to promote rail, river, and ocean transportation, and we have been legislating very intelligently upon rail transportation, and we are getting it perfected—we are going to have it perfected. We have made a great advance recently with reference to ocean transportation. There was some doubt as to some of the provisions of the so-called shipping bill, but undoubtedly we have an organization that will work out eventually and become a perfect system. Many details can doubtless be changed as the result of experience; but we have not as yet entered upon this question of river transportation at all adequately, and the dissatisfaction of the country is with the inadequacy and inefficiency of the system, which dissatisfaction has developed during our handling of this subject.

We have also the problem of the conservation of our natural resources. We have also the problem of the development of land which is without water—arid lands. We have the problem of reclamation before us. We must have moisture to grow things. You can not name a product of the soil that is not composed of 75 per cent water. We have never yet addressed ourselves to the question of scientific production. We were on the verge of this system when we passed the reclamation act. We have been reaching out with a view to supplying at all times sufficient water to promote production, but we have not gone far enough. We have neglected the development of water power which comes from the gradual fall of water from the upper or higher reaches of our rivers to the lower level. We have not considered the utilization of that force and the development of electric power, which is becoming such a factor in the lives of the people of our country. This problem is one not only of navigation but of conservation—not only conservation of water but conservation of land and the development of the production of the soil.

A proper development of our rivers should not only advance transportation but include every possible use of the waters of our rivers—the storage and diversion of waters for the irrigation of arid lands, the control of these waters for the reclamation of swamp lands, the immediate development of water power, conservation of forests, and the storage of water for application, even in the humid region, for intensive cultivation. The development of our rivers involves every possible form of conservation of the natural resources of this country, outside of the mines. The only way to do it is to do it logically, fully, and comprehensively, serving at the very outset every use to which this water can be put, and so making our plans as that each use will dovetail into every other use in such a way as to produce economy in construction, economy in administration, and the fullest development of all the uses.

Here we have this map [indicating]. It shows in red the navigable portions of rivers, and in green the unnavigable portions. You must remember that the navigable portions of our rivers are very inadequately developed.

Senator KENYON. Has the wider coloring there any significance?

Senator NEWLANDS. It signifies the tonnage—the relative tonnage that is carried on these rivers. You will observe that the Ohio has a higher tonnage than the lower Mississippi.

Senator NELSON. The upper Mississippi has a bigger tonnage than the lower Mississippi.

Senator NEWLANDS. Yes. That is a singular thing. The cause lies in the fact that along the lower Mississippi there are two railway systems, upon each side, that have been struggling with the river for the carriage of the cheap and bulky traffic to which I have referred.

Senator KENYON. It is the same thing on the upper Mississippi.

Senator NEWLANDS. Yes; but not to the same degree. It is a very natural thing for these railroads when they are in their first stages—when in a pioneer condition—to grab every bit of traffic they can; and hence they reach out for all this cheap and bulky traffic that generally goes to the waterways. They have tried to destroy the water carriers, and they have more or less done that. The country has grown up to the facilities of these railroads, and now they are threatened with a congestion of traffic. We had a serious congestion of traffic only a little while ago; caused by what? Caused by the fact that the railroads handle to the Atlantic coast ports, for shipment to Europe as well as for domestic consumption, all the products from the West. The railroads simply could not handle the traffic, and the result was a congestion of traffic. They were obliged, of course, to do this in order to meet the demands of the communities, to carry these cheap and bulky products of the mines, the forests, and the farms. They were obliged to carry them. If we develop the waterways of the country it will do away with the railroad expansion now necessary to handle this cheap and bulky traffic, and it may even do away in part with the necessity for spending this billion and a quarter of dollars annually which the railroads say we must expend. You must understand that for every unnecessary dollar that is paid out on the railroads the people must assume a burden in the form of rates.

Senator **Kenyon**. Does your bill provide for coordination of railway and water traffic?

Senator **Newlands**. In a measure it does; but I have other bills before the Interstate Commerce Committee now pending which will meet that difficulty. I thought that when we entered seriously upon the question of river transportation of this country for navigation that that whole subject ought to be intrusted to the Interstate Commerce Committee. I think that, inasmuch as that committee has jurisdiction over rates all over the country and practically over construction, it ought to have supervision over water carriers and railroads both, not only as to their rates and practices but also as to the development of the instrumentality upon which the water carriers—through which the water carriers operate, the rivers themselves. I thrashed this out last year and endeavored to get the bill referred to my committee, but the Senate did not feel so disposed. As it is, we have got to work out now the problems of transportation as I have outlined them through the joint efforts of your committee and my committee.

Senator **Vardaman**. About the only waterway on that map that is now in condition to carry traffic which you have just been describing without further appropriation is the Mississippi River. That we are now trying to protect. We are trying to protect the people from an overflow. It is the only waterway that would not need attention from Congress in order to prepare it to do the things that you want ultimately to be done.

Senator **Newlands**. I think that the lower Mississippi requires more attention than any other part of the river system of our country, in my judgment. What is it to-day?

Senator **Vardaman**. You mean as a freight bearer?

Senator **Newlands**. As a freight bearer; yes. I think we have to develop the transfer facilities, terminals, etc.

Senator **Vardaman**. Of course, that all goes with the traffic. When it starts that way, of course, they will have to do that. That is a thing that will not be done by the Government.

Senator **Newlands**. But it is a thing that you have to meet.

Senator VARDAMAN. That will not be done by the Government, because the railroads have taken the business away. They have the water upon which to float the boats, but they have not the traffic, because the railroads have taken the traffic.

Senator NEWLANDS. You have to meet that condition. You have to see that the connecting links between the railways and the river transfer facilities are established, and we have also got to see to it that there is proper coordination between water and rail traffic—between water and rail transportation. You can not compel coordination between water and rail until you have got the physical connection between the water and rail transportation systems—the physical terminal facilities, the transfer facilities that will make handling of traffic cheap and efficient.

Senator VARDAMAN. Your idea is, then, to have the General Government construct those transfer facilities?

Senator NEWLANDS. My idea is to make every waterway in this country which is capable of navigation ultimately as perfect as any railway system in the country.

Senator VARDAMAN. But would you have the Government bear the expense?

Senator NEWLANDS. Well, the system of cooperation which this bill provides for will take care of that. This bill provides that the States and communities and private corporations shall cooperate with the Federal Government. The matter will be handled by broad adjustments between the various sovereignties and the various interests.

Senator VARDAMAN. That is a beautiful theory.

Senator NEWLANDS. It is a perfectly practicable theory. When I urged irrigation 20 years ago various statesmen demanded proof that irrigation was practicable. They demanded that proof in spite of the fact that irrigation had been practiced throughout the world from the dawn of history. The fact that it had been so practiced since the dawn of history made it conclusive. It did not need to be proved. Yet these geentlemen required proof of its practicability. Now, then, you are requiring proof when you say it is a beautiful theory—proof that my plan is practicable. My answer is that its practicability has been demonstrated throughout the civilized world—that it has been demonstrated in France, demonstrated in Germany, demonstrated in Austria, and even demonstrated in Russia. What is the cause of Germany's enormous efficiency in the commerce of the world? Why, gentlemen, the answer to that is that she has brought river transportation, rail transportation, and ocean transportation into perfect coordination. She does not need to commit the economic blunder of putting upon the railroads the cheap and bulky produce, which we do.

Senator VARDAMAN. Don't you think the Government would have to own and operate the boats and own the means of transfer from railroad to boats?

Senator NEWLANDS. It is not necessary for me to reach out and consider that question now. I have my views on that subject, but I think it is perhaps premature to present them at this time. I want to present a case for my bill and to ask the cooperation of this committee in working out the problems before us. There should be a general central commission of the Federal Government to cooperate with the various organizations, the various services, the various States and communities in handling these problems.

Now, then. let us look at this a moment. I imagine there must be 50,000 miles or more of waterways upon this map [indicating]. You will observe that we have here three great systems or waterways in the West—one is the Columbia River, of which the Snake is a tributary. That stream stretches all the way from the Pacific coast down here [indicating], through the States of Washington, Oregon, and Idaho, and to the western part of Wyoming. Then, you have the Sacramento and San Joaquin Rivers, entirely in California, and draining a valley which is unsurpassed in the world in fertility, stretching from north to south a distance of nearly 500 miles. The slope is here [indicating], from the north toward the center, and then from the south toward the center [indicating on map]. We have two rivers, one from the south, the San Joaquin, and the other from the north, the Sacramento, which join near San Francisco Bay and empty into San Francisco Bay.

Now, gentlemen, what problem have we there in relation to California? We have to realize that this region in the northern.half of the valley [indicating on map], while it is fairly well watered, has periods of drought, and in order to make it fully productive irrigation must be resorted to. What is the problem there? You have during the wet season in the northern part too much rain, an excess of water. The problem is to store the water in the upper reaches, so that the water can be taken out and utilized on these arid lands.

Now, what is the problem in the southern part? This section is absolutely arid or semiarid, and you can not cultivate the land without irrigation. The land when irrigated is worth very much more, because of the productiveness of the climate, than in the northern part of California.

Senator JONES. You understand, Senator, do you not, that the California commission reported against storage of that water?

Senator NEWLANDS. If they did, I say they are wrong. I want a commission of which the Chief of the Reclamation Service is a member to pass upon that question. As yet that measure has been considered only by the Engineer Corps of the Army.

Senator JONES. The California men have considered it.

Senator NEWLANDS. But it was the California men interested in the reclamation and development of swamp lands. There is a strong contention, a very strong sentiment, there among engineers and others in favor of the development of the upper Sacramento.

Senator NELSON. Who is the Chief of the Reclamation Service?

Senator NEWLANDS. How is that, Senator?

Senator NELSON. Who is the Chief of the Reclamation Service—Mr. Davis?

Senator NEWLANDS. Yes.

Senator NELSON. Didn't he say that the storage proposition was a failure on the upper Sacramento?

Senator NEWLANDS. I am not aware of it. If it is, there are other methods of irrigating lands outside of storage.

What is the next proposition? The southern half of this valley is absolutely arid. The land is all extraordinarily valuabe, much more valuable than it is up here [indicating on map], where water is abundant. The country in the north is producing vast quantities of water, which are being hurried out into the bay here [indicating]. It will be found impracticable to control these waters and divert them over to this side [indicating on map] to the uttermost reach of the San Joaquin. That valley will furnish the irrigation necessary for these arid lands in the lower part. The flood waters from the northern part of the State [indicating on map] can be used to irrigate the lands in the southern part of the State. This excess of water from the northern part of the valley will be carried down to the lands of the southern part of the valley which now lacks water, and in which such wonderful development has been made as that of Fresno, one of the wealthiest agricultural communities of the world as a result of the application of the scanty waters which the southern part of the State affords.

Now, gentlemen, we have these two streams. Then we have the Colorado River here [indicating on map] emptying into the Gulf of California—the Colorado River. Just follow its course there. You will see that it runs along the border of Arizona and touches or passes through Nevada, Utah, Colorado, and Wyoming—those five States—and carries a flood of water there. Although that river passes through all that territory, the only part or section of country which it benefits, under the present development, is the Imperial Valley in California, near the Mexican line, which is a depression in the desert below the ocean level. There is in that valley, as a result of the innumerable floods from the Colorado River, an enormous deposit of alluvial land, and by diverting the waters from the Colorado River into that valley, they have developed there, below the level of the sea, a great empire of agricultural wealth. Now, what do they find themselves threatened by? The waters of the Colorado may break into that valley in periods of flood and destroy the entire development and restore the old Salton Sea that existed there years ago. These flood waters should be controlled at their sources in Arizona, Nevada, Utah, Colorado, and Wyoming and put to profitable use in the development and the reclamation of arid lands.

Are we making any study of that? Yes; under the Reclamation Service; but it is a study in which we ought to have the cooperation of the other scientific services of the country. We have 10 or 12 scientific services in the United States of great learning and capacity, each of which has worked on water problems in a detailed way without any consultation with or cooperation with the other services. One of the most important purposes of this bill is to bring every one of them under the Chief Executive of the United States, so as to work in coordination and make plans adequate to the demands of the country.

We have here [indicating on map] what is called the Great Divide. It stretches from Montana down through Wyoming, Colorado, New Mexico, and into Texas. You will observe that that divide is the mountain height, which separates the Pacific slope from the Mississippi slope. You will observe that these rivers [indicating]—the Columbia and the Colorado—flow west from this divide.

On the eastern slope, flowing toward the Mississippi, we have these rivers: The Missouri, the Yellowstone, the Platte, the Arkansas, and numerous other rivers. All these rivers take in all this irrigable region east of the Great Divide, into the Mississippi, and contribute their floods, from rains and heavy snows, to the vast flood that accumulates on the lower Mississippi. There are 23 States west, north, and east of the Mississippi that are emptying their waters into this channel, the floods concentrated above New Orleans, a city which is in constant danger of being destroyed by excess flood waters. What is the problem there? What is the problem of the people who live on these rivers here [indicating on map]? It is not one of flood protection alone. It is a problem also of the utilization of these waters above for profitable purposes, such as the development of arid-land reclamation, of forests, of intensive cultivation, and water power. The control and absorption of the waters for these purposes slow up their progress to the Gulf of Mexico and thus the crest of the floods below is lowered.

Here is the Missouri River [indicating on map], which is navigable up to Montana, to Fort Benton; and yet its navigability is useless and is practically destroyed by the efforts of these great transcontinental systems of railroads which were built out into the desert, where there was no population, or comparatively none, and where they were compelled, in order to live, to absorb and monopolize all the cheap transportation—all that traffic which should go by cheaper methods of transportation. At first they had to seize that transportation in order to live, and they have become accustomed to a monopolization of that business, and they have succeeded in securing it. They have also succeeded in lodging in the minds of the American people—and I find it exists right here in this committee—the idea that river navigation is impracticable. I say that river navigation has been destroyed by force not reason.

What other problem is there besides the storage of these waters in reservoirs and in the lands themselves through irrigation and intensive cultivation? There is the development of water power. That is a great problem. This water is flowing from an elevation of from 6,000 to 10,000 feet, and in some cases over—from here down to there [indicating on map]. That is true of the Mississippi, the Missouri, the Yellowstone, the Arkansas, the Platte, the Ohio, and numerous other rivers. The water falling from one level to another produces power. That is a great natural force that ought to be utilized, not under monopolistic development, but under governmental supervision and direction and control, in such a way as to secure its fullest use on the cheapest terms by the American people. The development of these rivers means, not only the navigation of the Missouri River, not only future navigation upon the Platte, the Arkansas, and other streams, but it involves the reclamation of arid and semiarid lands and the development of water power.

The problem is to slow up the progress of these waters from these heights down to the Gulf of Mexico and to the oceans.

There has not been a flood in this country which if it had been stretched over double the period which it has covered would have been a source of much danger. Slow down the rapid concentration of flood waters and the problem is solved. Instead of conserving these waters, our policy has been to say, "No; we will hurry them down to the Gulf of Mexico." We are permitting this entire northern country to drain its swamps and are perfecting a system by which all the waters falling in that region will be rapidly shed into the main streams; and then we say to Arkansas, Mississippi, Tennessee, and Louisiana, "Why, that is a local problem."

I do not want to diminish this drainage of waters above here at all [indicating on map], but I say that, inasmuch as the States are establishing a system of artificial drainage of the wet lands of the northern region with a view of opening lands for cultivation, we ought at the same time to create an artificial storage and diversion for the use of the dry lands. We know that the lands in the humid regions of the North have the disadvantages of arid lands at times, for they have seasons of drought in which a growth promising the largest production suddenly withers as a result of the lack of moisture.

This is because they do not go at these things as scientifically as they do abroad. How is it that the soil of Europe, which has been used century after century, produces a greater yield than the comparatively virgin soil of our own country? Because they address themselves to scientific methods; whereas we have neglected them.

Now, all these rivers west of the Mississippi, all these rivers to the east of the Mississippi, all up here and there [indicating on map] are a part of the great Mississippi River system; and it is essential to take hold of it and its tributaries as a unit from source to mouth, instead of taking up segregated portions.

As to our Atlantic coast, the river problems are not so important so far as transportation is concerned. Few of the rivers are of much length because of the nearness of the mountains, in which they take their course, to the ocean, but they have their flood and water-power problems, which should be solved, and they have waterway problems involving an artificial connection of their bays and sounds in such a way as to secure an inland coastal waterway from Boston to Florida.

Now, as a practical matter, I do not think you can get through with a problem like this and handle it in the proper way, unless it is planned from a start to make it adequate to the demands of the situation, and so that it will meet the conditions in the various sections of the country. I think it would be unjust, and also selfish, for any one section of the country to say, Our needs are greater than yours, and we will require all the money that you are going to apply to this purpose for the next 10, 15, or 20 years. The country will not stand for that; and it is not the right thing to do.

Senator KIRBY. Take your scheme as you propose it—you can not do it all in one.

Senator NEWLANDS. There should be a rational method, of course. We can not do it all at once. What we propose to do is to give the lower Mississippi what it asks for right now. We admit it is a most puzzling problem, and we have provided in this bill to meet that problem by an appropriation, the appropriation called for by the engineering authorities; but my judgment is that we will have to give the Mississippi River more money, because this appropriation only calls for completing the levees. You must revet every mile of of that river from the Gulf up to Cairo.

Senator KENYON. What will that cost?

Senator VARDAMAN. Do you mean to say we will have to revet all of that?

Senator NEWLANDS. Yes.

Senator VARDAMAN. Pardon me, but I do not think we will have to do anything of the sort. We will not have to revet all that.

Senator NEWLANDS. We certainly will, in time except where the banks of the river are against the bluffs. It ought to be done. We should not be scared by big projects. We are a big country. If we have to spend a billion and a quarter dollars annually for the extension of the railroad systems of this country, as was testified before our joint committee on Interstate Commerce, why not face with equanimity the problem of the expenditure which will be required for river development and which will be productive of wealth that will warrant the development. In my opinion, Senator, you must eventually have both sides of that river revetted. It may take from 50 to 100 years to do it, but it must be done. This work will never end. It will never end any more than the building or extension of railroads will end; it will never end any more than the building of country roads will end; it will never end any more than the building of streets in growing cities. It will always be a problem. We will always have large expenditures. A stupendous amount has been expended on the country roads of the various States of this country. If you will look into that matter, you will find figures that will stagger the imagination. If at the outset you had presented those staggering figures to the people who were going to stand the expenditure, they might very well have said, "The cost is too great; we will not enter into that at all." But the work of road building has gone on, and is still going on; and these vast sums of money are being spent for that purpose, and will continue to be spent. We should not think of abandoning the plan of river development simply because it is going to cost a big sum of money. You must think of this matter in big figures.

Between Cairo and New Orleans is the most important part of the navigable rivers of this country. The river flows through an alluvial soil hundreds of feet deep. At one time in the remote past the Gulf of Mexico probably extended to Memphis and possibly beyond. This delta region has been the result of the erosions of earth on the mountain tops and the plains above here [indicating on map]. The land down here [indicating] is composed of rich materials—billions of tons—which are emptied into the river from our plains. So this area is an alluvial deposit, and is washed down from the upper reaches of the rivers. This alluvial soil is easily washed off, and the river bed in such a soil is constantly changing. The Missouri River at many points above St. Louis, you will find, has been and is a very capricious river, and it has forced its way from one side to the other in this alluvial deposit; so that a town which is on one side this year may next season find itself on the other side.

The farmers can not cultivate successfully, owing to the changing channel. They can not estimate their production, because they do not know how much land they are going to have to cultivate. It has been better controlled on the lower Mississippi River, but still it is insufficiently developed there.

You must first make your banks firm. How? You could cement them. That would be very expensive. In lieu of that, you can put in a system of revetments. Revetment consists of willow, which is very extensively produced down there, woven together in mats, and sunk with broken stone along the banks.

Engineers have found that that system makes a firm bank which does not erode or dissolve. One of our chief difficulties on the Mississippi River is in connection with the caving in of the banks. The water caves the banks in and then washes the material down into the river, but it can only carry it for a certain distance, where it blocks the channel in the shape of bars.

I think that beyond question we must revet that river all the way down, and I think it will be done one of these days, and they will have the banks so firm that these constant erosions of the soil will not exist, and the formation of these shoals and sand bars will not take place.

These revetments will cost about $100,000 a mile. What is that amount when you take into consideration the importance of a waterway like the Mississippi River, the greatest waterway in the world? England has expended $250,000 a mile for her railways, and they are capitalized at that amount. France has capitalized her railways for $150,000 a mile, and Germany has capitalized hers at $125,000 a mile.

We complain of the high cost of the railway systems of this country. Why, our system is the cheapest in the world. We have built our railroads at an average cost of $65,000 a mile.

However, in the great centers of production, like Pennsylvania, for instance, you will find railways that have cost $200,000 a mile, when you take into consideration the cost of the terminal facilities, etc.

I would not expect to expend such a sum as that upon these tributaries, but I would not hesitate a moment to expend it on the lower Mississippi.

Go, as I did, down the lower Mississippi there, and see what an indictment it constitutes of our foresight and our judgment. You find there only a few towns of any size. Why, compared to the Rhine, or the Danube, that condition you find there is pitiable in the extreme. Towns established on the river are not safe. Why? Because of this constant erosion—the caving in of banks—and the abandonment of river transportation forced by the railroads. If we established a firm bank it would be perfectly safe to establish towns upon these banks; and river towns are the most beautiful in the world. In Europe they are established on river banks in preference to sites away from the river, and they are not only the most beautiful, but they are the most accessible to commerce. We are establishing in this country cities away from our rivers. We are improving the Ohio River, I believe, at the rate of something like $60,000 a mile—I do not recollect the exact amount. What we want is a wide and rational system, carefully investigated and planned. Why not make these tributaries navigable from the natural head of navigation to the Gulf of Mexico?

Senator SHIELDS. On the Ohio River there, the evidence shows that it is not the same problem you have on the lower Mississippi.

Senator NEWLANDS. No; but it is the same problem you have on other tributaries of the Mississippi. It is possible to have storage there.

Senator SHIELDS. That would not be possible.

Senator NEWLANDS. Similar development would be possible.

Senator HARDING. We have storage there for the prevention of floods in the Ohio, and there is under consideration a $60,000,000 scheme for the Scioto.

Senator SHIELDS. That has no effect upon the Mississippi River flood.

Senator Harding. No. It has not been built. It has been undertaken only since 1913.

Senator Vardaman. That is development for purely flood control.

Senator Shields. I understand there was a report here several years ago by Senator Nelson, in which he found that the storage on the Ohio River would cover very valuable lands, and that it would cost more to protect them than the damage done in the Mississippi River—it would destroy what we are trying to protect.

Senator Vardaman. It would cost more than to protect this entire Mississippi project?

Senator Shields. Yes.

Senator Harding. These rivers would have an appreciable effect because there are three rivers—the Scioto, the Muskingum, and the Miami.

The Chairman. Gentlemen, we have only a few minutes left.

Senator Newlands. I will be as brief as possible. I am pretty nearly through. I just wanted to comment upon this situation in Ohio. We all know that there was something like $100,000,000 of damage there a couple of years ago. That was occasioned by the floods of the Miami, Scioto, and the Muskingum. Now, the people of that State have set manfully to work to solve the problem. Some of these steps they took at the beginning were later found to be impracticable, but they have found, through experience, something that will work out all right. They have a commission organized there to handle the work. Why should not the Nation have some commission to cooperate with these various boards? The Senator from Tennessee, Mr. Shields, says that the cost of storage there would be enormous, and yet it is not so enormous as to prevent an engineering board from reporting to the people in the Miami Valley that a certain work could be accomplished for $20,000,000, and they are entering upon it. Is that right?

Senator Shields. Yes.

Senator Newlands. That question of storage at that enormous sum came up a couple of years ago. The people have organized to make the work a success. Why should we not have a national commission to coordinate our engineering and scientific services and to cooperate with that commission?

I do not expect the entire burden of this development to fall upon the Nation. I expect that by this system of organization, and system of coordination of services, there will be a proper apportionment of costs and of benefits between the interests, and that the waters of the country will be so controlled as to make them creators instead of destroyers of wealth.

The purpose of the substitute bill which I offer is, without any immediate appropriation beyond the amounts necessary to complete the approved projects of the lower Mississippi and the Sacramento and a small appropriation for a general investigation and plans, to organize a Cabinet commission, in touch with the President as their chief, and embracing the four departments in which are the numerous engineering and scientific services that are engaged in the study of the water problem, which will take up the investigation and planning of the control of every watershed in the country, with a view not only to the promotion of navigation but with a view to source control, thus slowing up the waters in their progress from the watersheds to the lower reaches of the great rivers, and their control for every beneficial purpose, including mitigation of floods, irrigation of arid lands, the development of water power, the reclamation of swamp lands, the increase of intensive cultivation in the great humid region, and the development of forest areas. Whilst I am willing to waive the requirements of my original bill regarding the creation of a waterway fund of $60,000,000 annually, I hope that this will not be regarded as an abandonment of my view that the most effective way of going about this work is to recognize at the very start the largeness of the conception, the bigness of the work, and to provide adequately for it, so that it may not be subjected to the contingencies to which other great public works have been subjected, namely, the temporary laying aside, the temporary abandonment, the temporary slowing up of the work in such a way as, possibly, to defeat the success of the plan itself.

The problem which we have before us is to make 25,000 miles of waterways in this country as perfect instrumentalities of commerce as are our railroads, with every device for coordination between rail and boat, such as transfer facilities and sites, with all the instrumentalities that cheapen transfer, and, above all things, legislation that will compel fair treatment of the water carriers by the rail carriers and not permit the rail carriers, as they have done heretofore, to sandbag the water carriers.

Senator VARDAMAN. Pardon my interruption, Senator. We want to hear somebody else after you get through. But I just want to say this: There is a great deal of merit in your scheme. It is very creditable to your foresight and great intellect. But the plan that has been proposed in the flood-control bill for handling the Mississippi River problems and those in California appropriate money for those first. It is a step in the direction of the fulfillment of your plans. If the Government takes up these two projects and perfects them it will lead to enlarging the plan and, in a measure, be a fulfillment of your hopes in this matter. The people of the country and Congress are not prepared yet to take your great comprehensive scheme.

Senator NEWLANDS. The only people who are not ready for it are those of your section.

Senator VARDAMAN. You are mistaken.

Senator NEWLANDS. The North and the West are prepared to take it up, and the intermountain region is prepared, and the opposition comes from the southern portion of the country.

Senator VARDAMAN. I think you are mistaken.

Senator NEWLANDS. I will answer that. I agree that the development of the Mississippi is the most important, but this problem can not be worked out except by source control above united with revetment and levees below.

I thank you very much for listening to me with so much patience. I will add to the record the things I have mentioned.

The CHAIRMAN. We have been very glad to hear from you, Senator.

We have here the riparian owners. There are only five minutes left, though, gentlemen.

Senator VARDAMAN. They can not present their case in that time.

The CHAIRMAN. No; to-morrow is our regular meeting day.

Senator VARDAMAN. I am asking, Mr. Chairman, that we have this matter gotten through with this week. I want to have Mr. Humphreys make a statement at the present time.

The CHAIRMAN. We will probably have time to hear him tomorrow.

Senator VARDAMAN. I hope so. He can give the committee the benefit of his investigations.

The CHAIRMAN. The committee will adjourn until 10 o'clock tomorrow morning.

(Whereupon, at 12 o'clock, noon, an adjournment was taken until to-morrow, Thursday, December 21, 1916, at 10 o'clock a. m.)

APPENDIX

[SENATE REPORT NO. 1339, SIXTY-SECOND CONGRESS, THIRD SESSION.]

CREATION OF A BOARD OF RIVER REGULATION AND PROVISION OF A FUND FOR THE REGULATION AND CONTROL OF THE FLOW OF NAVIGABLE RIVERS IN AID OF INTERSTATE COMMERCE, ETC.

MARCH 3, 1913.—Ordered to be printed.

Mr. Newlands, from the Committee on Commerce, submitted the following report:

By direction of the Senate Committee on Commerce, I hereby report Senate bill 122, with amendments, without recommendation.

The purpose of the committee in reporting the bill to the Senate is to draw public attention to it as embracing a subject of needed legislation and with a view to obtaining such an expression of public opinion regarding it as to enable the committee at the next session of Congress to proceed with its serious consideration.

The bill, with suggested amendments, is as follows:

A BILL To create a Board of River Regulation and to provide a fund, for the regulation and control of the flow of navigable rivers in aid of interstate commerce, and as a means to that end to provide for flood prevention and protection and for the beneficial use of flood waters and for water storage and for the protection of watersheds from denudation and erosion and from forest fires and for the cooperation of Government services and bureaus with each other and with States, municipalities, and other local agencies.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the sum of fifty million dollars annually for each of the ten years following the first day of July, nineteen hundred and twelve, is hereby reserved, set aside, and appropriated, and made available until expended, out of any moneys not otherwise appropriated, as a special fund in the Treasury, to be known as the "river regulation fund," to be used for the regulation of interstate commerce and in aid thereof for examinations and surveys and for the construction of engineering and other works and projects for the regulation and control of the flow of navigable rivers and their tributaries and source streams, and for the standardization of such flow, and for flood prevention and protection, by the establishment, construction, and maintenance of natural and artificial reservoirs for water storage and control, and by the protection of watersheds from denudation and erosion and from forest fires, and by the maintenance and extension of woodland and other protective cover thereon, and by the reclamation of swamp and overflow lands, and by the building of drainage and irrigation works, and by doing all things necessary to provide for any and all beneficial uses of water that will contribute to its conservation or storage in the ground or in surface reservoirs as an aid to the regulation or control of the flow of rivers, and by acquiring, holding, using, and transferring lands and any other property that may be needed for the aforesaid purposes, and by doing such other things as may be specified in this act or necessary to the accomplishment of the purposes thereof, and by securing the cooperation therein of States, municipalities, and other local agencies, as hereinafter set forth, and for the payment of all expenditures provided for in this act; the purpose of this act being river regulation and the control of the volume of water forming the stage of the river from its sources, so as to standardize the river flow, as contradistinguished from and supplemental to channel improvement as heretofore undertaken and provided for under the various acts commonly known as the river and harbor acts.

CREATION AND MEMBERSHIP OF BOARD OF RIVER REGULATION.

SEC. 2. That a board is hereby created, to be known as the "Board of River Regulation," consisting of the Chief of Engineers of the United States Army, the chairman of the Mississippi River Commission, the Director of the United States Geological Survey, the Forester of the Department of Agriculture, the Director of the Reclamation Service, the Chief of the Bureau of Plant Industry of the Department of Agriculture, the Secretary of the Smithsonian Institution, one civil engineer, one sanitary engineer, and one hydroelectric engineer. The last three shall be appointed by the President and hold office at his pleasure, and they shall each receive an annual compensation of seven thousand five hundred dollars, payable out of the appropriation hereinafter apportioned to the Smithsonian Institution. The members of said board, with the exception of the three members appointed by the President, shall serve as such only during their incumbency in their respective and official positions, and any vacancy on the board shall be filled in the same manner as the original appointment. A chairman and a secretary of the board shall be elected annually by the board from its members.

All formal action taken and all expenditures made or authorized by the board shall be reported to the President of the United States, and shall be by him transmitted to Congress annually, or at such more frequent times as may appear to him desirable, or at such times as Congress may require.

COOPERATION WITH STATES, MUNICIPALITIES, AND OTHER AGENCIES.

SEC. 3. That the board shall, in all cases where possible and practicable, encourage, promote, and endeavor to secure the cooperation of States, municipalities, public and quasi public corporations, towns, counties, districts, communities, persons, and associations in the carrying out of the purposes and objects of this act, and in making the investigations and doing all coordinative and constructive work provided for herein; and it shall in each case endeavor to secure the financial cooperation of States and of such local authorities, agencies, and organizations to an extent at least equal in amount to the sum expended by the United States; and it shall negotiate and perfect arrangements and plans for the apportionment of work, cost, and benefits, according to the jurisdiction, powers, rights, and benefits of each, respectively, and with a view to assigning to the United States such portion of such development, promotion, regulation, and control as can be properly undertaken by the United States by virtue of its power to regulate interstate and foreign commerce and by reason of its proprietary interest in the public domain, and to the States, municipalities, communities, corporations, and individuals such portion as properly belongs to their jurisdiction, rights, and interests, and with a view to properly apportioning the costs and benefits, and with a view to so uniting the plans and works of the United States within its jurisdiction, and of the States and municipalities, respectively, within their jurisdictions, and of corporations, communities, and individuals within their respective powers and rights, as to secure the highest development and utilization of the waterways and water resources of the United States.

The board may receive and use any funds or property donated or subscribed to it or in any way provided for cooperative work, but no moneys shall be expended under any arrangement for cooperation until the funds to be provided by all parties to such arrangement shall have been made available for disbursement.

ENCOURAGEMENT OF INDEPENDENT INITIATIVE AND CONSTRUCTION.

SEC. 4. That all things done under this act shall be done with a view not only to constructive cooperation, as herein provided, but also with the definite and specific object of enlarging the field of accomplishment contemplated by the act through promoting and encouraging independent initiative and construction by States, municipalities, districts, and other local agencies and organizations, and creating object lessons and building models and making demonstrations that will have that effect and influence, and induce such supplemental and independent action and construction.

CONFERENCE AND COOPERATION OF BUREAUS AND STATES.

SEC. 5. That it shall be the duty of said board to coordinate and bring into conference and cooperation the various scientific and constructive bureaus of the United States with each other and with the representatives of States, municipalities, public and quasi-public corporations, towns, counties, districts, communities, and associations in the carrying out and accomplishment of all the provisions, purposes, and objects of this act.

The board shall have authority to call upon and to bring into cooperation any other Federal department or bureau whose investigations or assistance may be found necessary to the carrying out of the provisions of this act, and the board is hereby authorized to defray the expenses of such investigations or assistance through a transfer of so much of its appropriation as may be necessary to the Federal department or bureau thus brought into cooperation.

CORRELATION, COORDINATION, AND ADMINISTRATIVE ECONOMY.

SEC. 6. That the board shall harmonize and unify and bring into correlation and coordination the investigations made, and information data, and facts collected and obtained by the various bureaus or offices of the Government relating to or connected with the matters and subjects referred to and the questions involved in this act, and to print, publish, and disseminate the same, and it shall exercise such general supervision as may be necessary to provide against duplication or unnecessary, inadequate, unrelated, or incomplete work in connection therewith, and shall make such recommendations to the President as it may deem advisable at any time for the accomplishment of that end or in the interest of harmonious cooperation, efficiency, and economy in carrying out the purposes of this act. The special function of the board at all times shall be to promote the adoption of the best and most approved methods and systems of investigation, administration, construction, and operation, in carrying out such specific improvements, works, and projects as are authorized by this act, or which may be from time to time authorized by Congress, if within the scope of the work of the said board as herein set forth; and it shall further be the special function of the board to effect the largest possible saving as the result of the unification, correlation, and coordination of the work of the various bureaus in the investigations and administrative and constructive work provided for in this act in accordance with existing law or with such provisions as Congress shall from time to time impose.

REPORTS, PLANS, AND ESTIMATES BY THE BOARD.

SEC. 7. That the functions of the board shall be to obtain full information through its members concerning all proposed expenditures provided for within the scope of this act. Each bureau chief member shall report to the board the work proposed by the bureau or organization which he represents, and shall present full plans and estimates covering such proposed construction or action. The findings and conclusions of the board and plans adopted by it for construction and action shall be binding upon the members thereof in so far as may be consistent with existing laws.

REFERENCES TO AND INSTRUCTIONS FROM THE PRESIDENT.

SEC. 8. That all matters involving apparent conflict with departmental authority, jurisdiction, or procedure, or as to which the board may desire suggestions or advice, shall be laid before the President, who may thereupon call into conference the Secretaries of the departments represented on said board, and thereafter suitable instructions shall be issued by him to heads of departments with a view to securing unity of action along the lines approved by the President.

EXECUTION OF PLANS AND WORK BY THE SEVERAL BUREAUS.

SEC. 9. That in the execution of all plans and duties intrusted or delegated to the several bureaus the respective chiefs thereof, acting under departmental regulations and procedure, shall execute the work according to the methods prescribed by law, the functions of the board being those of a consulting and advisory body with power to make recommendations to the President, and through the President to the heads of departments, with a view to effective coordination and cooperation as to all things proposed by this act, and to carry out such work as Congress shall from time to time prescribe or has prescribed in this act.

COMPREHENSIVE PLANS FOR RIVER REGULATION.

SEC. 10. That the board shall develop, formulate, prepare, consider, and determine upon comprehensive plans for the conservation, use, and development of the water and forest resources of the United States in such manner as will best regulate the flow of source streams and navigable rivers, and embracing, with that object, flood protection, drainage, and the reclamation of swamp and overflow lands; water storage in natural and artificial reservoirs; the beneficial use of waters for irrigation and for all domestic, municipal, and industrial purposes; the maintenance and development of underground water supplies and the storage of waters in the ground and in irrigated lands and underground reservoirs; the enlargement of the areas and raising of the levels of the ground waters; the construction of flood-water canals, by-passes, and restraining dams; the control and regulation of drainage and the replenishment of streams by return seepage; the perpetuation of forests and maintenance of woodland cover as sources of stream flow; the prevention of denudation and erosion; the protection of river channels from eroded soil materials; the clarification of streams; the utilization of water power; the prevention of the pollution of streams and rivers; the sanitary disposal of sewage and purification of water supplies; the best distribution of forests, woodlands, and other growth, and of cultivated and irrigated areas in their relation to river flow; the protection of forested and woodland areas from destruction by fire or insects; the reforestation of denuded areas; the planting of forests and establishment of forest plantations; the preservation and planting of woodlands and any other growth and protective cover on watersheds; the increase and development of the porosity and absorbent qualities and storage capacity of the soil upon which rain or snow may fall; the making and furnishing of plans for flood-water storage and other works for irrigation and power for farms, towns, and villages; the acquisition, subdivision, and settlement in small, intensively cultivated farms of lands for water storage by irrigation; the building of the irrigation systems for such lands, including reservoirs, dams, canals, ditches, and all necessary works; the protection of farms, villages, towns, and municipalities from damage by freshets and overflow; and the impounding of flood waters in artificial lakes and storage reservoirs to prevent floods and overflows, erosion of river banks, and breaks in levees, and to regulate the flow of streams and reenforce such flow during drought and low-water periods, the ultimate object of all such work being to regulate and, so far as possible, standardize the flow of navigable rivers and source streams, and in the accomplishment of that object to induce and secure the cooperation of States, municipalities, districts, counties, towns, and other local agencies and organizations.

SMITHSONIAN INSTITUTION.

SEC. 11. That it shall be the duty of the Secretary of the Smithsonian Institution to give special attention to the acquisition from foreign countries and from all sources of all obtainable knowledge concerning the problems involved in the work of the board and to diffuse and disseminate the same, and to establish and maintain a museum of conservation in which such knowledge shall be placed before the people, with object lessons illustrating the disastrous consequences that have resulted from the failure of such conservation and particularly the failure to conserve the forest and water resources in other countries of the world, and to utilize the resources of the institution under his charge, which may be available for that purpose, to aid in the education of the public in the elements of knowledge which lead to the successful regulation of water and of the flow of rivers and the use of water in connection with agriculture and the intensive cultivation of land, and in connection with all other industries.

BUREAU OF PLANT INDUSTRY.

SEC. 12. That it shall be the duty of the Chief of the Bureau of Plant Industry to collate and bring together for the information of the board the results of all investigations with reference to soil and the production of crops through the use of water as a fertilizer and stimulant to plant growth, and of the relation of water in excess or deficiency to successful crop production. He shall recommend for the consideration of the board such further investigations as may properly be conducted in connection with the purposes for which the board is created and which shall lead to the largest and most valuable results being obtained through the use of water in connection with successful plant growth and increased crop production, and the establishment of a national sytsem for the information of the people in the intensive cultivation of small tracts of land, with a view to increasing food production and thereby reducing the cost of living and encouraging suburban and rural settlement and homemaking, and the beneficial use of water in connection therewith.

FOREST SERVICE.

SEC. 13. That it shall be the duty of the Forester of the Department of Agriculture to present to the board all essential facts bearing upon the relation of forests to the various problems under consideration and the value and importance of forests and woodland and other growth upon the headwaters of streams and their proper control and extension and protection from fire, as regulators of stream flow; also such facts as may be essential to the proper enlargement of forested areas for the protection of watersheds and the maintenance of the flow of rivers during the low-water season, and the prevention of denudation and erosion, with consequent silting up of channels; and to prepare and present to the board comprehensive plans for the protection of the forests from fire and other destructive agencies.

GEOLOGICAL SURVEY.

SEC. 14. That it shall be the duty of the Director of the Geological Survey to recommend to the board appropriate surveys and examinations, and upon proper approval cause to be executed topographic surveys of each drainage basin, these being planned with reference to the work contemplated by the board and the immediate demands and needs of the board. Such surveys shall include and show, in addition to the topography, the character of all lands embraced therein, and it shall be his duty to classify the same and designate the best use to which said lands may be devoted in carrying out the provisions of this act. The topographic maps shall be of such scale as will bring out the existence of feasible storage or reservoir sites, and he shall make such additional surveys of specific localities as may be required by the constructing engineers, and in such surveys he shall establish monuments based on geodetic horizontal and vertical control. And the surveys shall be of such nature as to provide adequate bases for geologic investigation and engineering works. He shall also cause measurements to be made of the flow of streams at such places as may be designated by the board as yielding results of largest importance in the discussion of the problems in hand and the execution of proposed engineering works, and shall carry on such studies in river pollution and purification, in water-power possibilities, and other stream investigations as the board may designate. It shall be his further duty to examine all forested lands or lands intended to be afforested or reforested which it is proposed to purchase under this act, and to report upon whether the control and use of such lands will influence the preservation of water supplies or stream flow or tend to regulate the flow of navigable rivers on whose watersheds they are located.

RECLAMATION SERVICE.

SEC. 15. That it shall be the duty of the Director of the Reclamation Service to bring before the board the results attained in the construction of works of irrigation and reclamation throughout the arid and semiarid regions of the United States and the application of the experience thus obtained to the conditions existing in the more humid sections of the United States. He shall extend the surveys and investigations and construction of irrigation works such as are authorized in the act of June seventeenth, nineteen hundred and two, known as the national irrigation act, throughout the United States and including reclamation of land by drainage as well as by irrigation: *Provided, however*, That no part of the fund created by the act of June seventeenth, nineteen hundred and two, shall be expended for this purpose. Such further investigations and construction and operations in States other than those covered by the original act above referred to shall be subject to the terms, provisions, and requirements of the said national irrigation act that may be applicable thereto, but shall be at the expense of the river-regulation fund created by this act, and expenditures from said last-mentioned fund may be made in any State or Territory. He shall construct, operate, and maintain, until otherwise provided by law, such irrigation works and systems as the board may determine are needed for the regulation of the streams and rivers and the improvement of agricultural conditions, or for the proper control, disposition, and utilization of sewage or other waste waters which, without such regulation, would pollute the streams or injuriously affect the health or prosperity of the community. He shall also present to the board proposed plans for cooperation with irrigation or drainage projects or enterprises constructed, initiated, or contemplated by States, districts, municipalities, corporations, associations, or individuals, and shall negotiate agreements for coordinating and making more useful works already in existence or proposed through their incorporation into more effective systems.

CORPS OF ENGINEERS, UNITED STATES ARMY.

SEC. 16. That the Chief of Engineers of the United States Army shall present to the board all proposed plans for levees, dikes, revetments, bank-protective and drainage works, and other works for river improvement which are proposed to be built under this act, and also all plans for the construction of reservoirs for the storage of flood waters, for flood prevention and river control which may be proposed to be built under this act, or for which examinations and surveys have been made by or with the cooperation of States, municipalities, or districts, and which it is sought to have constructed under this act, together with such facts and data as may be required for the construction of such works, or any of them, for the regulation of the flow of rivers. He shall also construct, operate, and maintain such levees, flood protection and drainage works and reservoirs as are built in accordance with this act for the storage of water to control and regulate the flow of rivers, and to reinforce such flow in seasons of low water and to prevent floods and protect lands and communities from overflow: *Provided, however*, That the provisions of this section shall be so administered as in no way to supersede or conflict with any specific provisions which Congress shall from time to time make by way of appropriations other than such as are made by this act for work and improvements to be performed or maintained by the Corps of Engineers, United States Army, but that all work prescribed under this section shall be supplemental to and coordinated with the work as specifically prescribed by Congress in other acts.

ENGINEER APPOINTEES OF THE PRESIDENT.

SEC. 17. That it shall be the duty of the three engineers appointed by the President under the direction of the board to consider and present comprehensive plans for the best utilization of the water resources of the United States in connection with river regulation along their respective lines, namely: Questions relating to general construction work; to water pollution, water purification, and sanitation; and to water-power problems; and to adjust all the plans contemplated for the projects constructed under this act to the central controlling purposes of regulating and standardizing the flow of the rivers of the United States, and to further give expert advice to the board in its consideration of details, problems, and projects; and it shall be their special duty to constantly promote and stimulate harmonious and effective cooperation between the Nation and States, municipalities, and other local agencies in working out constructive plans under this act. And it shall further be their special duty to carefully scrutinize and study the plans presented to the board for consideration, with the view of promoting the fullest possible measure of efficiency and economy in administration and construction, and avoiding all duplication in the work of the respective bureaus.

EQUITABLE APPORTIONMENT AMONG WATERWAY SYSTEMS.

SEC. 18. That in carrying out the provisions of this act regard must be had, as far as practicable, to the equitable apportionment and contemporaneous execution of the works and projects contemplated under this act among the several waterway systems of the United States. Not less than $10,000,000 annually shall be apportioned to the Mississippi River from Saint Louis to the Gulf,

$5,000,000 to the Missouri River, $5,000,000 to the Ohio River, $5,000,000 to the upper Mississippi River above Saint Louis, and $5,000,000 to the Sacramento and San Joaquin Rivers in California.

REPLENISHMENT OF RIVER REGULATION FUND BY BOND ISSUE.

SEC. 19. That the President is authorized, whenever the current revenues are insufficient to provide the fifty milion dollars appropriated for the river regulation fund, to make up the deficiency in such fund by the issue and sale of United States bonds, bearing interest at a rate not exceeding three per centum per annum, payable semiannually, and running for a period not exceeding thirty years.

APPROPRIATIONS AND APPORTIONMENT.

SEC. 20. That the moneys hereby annually appropriated in section one of this act shall be apportioned and expended by the services and bureaus herein named in carrying out the purposes and provisions of this act and under the direction of the heads of the respective departments and in accordance with existing laws and regulations or such modifications thereof as may be made from time to time in accordance with the general system proposed by the board and approved by the President of the United States for the following purposes:

For the Smithsonian Institution, for obtaining information and material relating to the subjects covered by this act in the United States and foreign countries, and publishing and distributing the same to the people of the United States, and for the establishment and maintenance of a Museum of Conservation of Forests and Water Resources, and for any other purposes mentioned or referred to in section eleven of this act, ——— dollars.

For the Bureau of Plant Industry, for the establishment and maintenance of garden schools and demonstration garden farms, and instruction in irrigation in model rural industrial communities, and for investigations and instructions with reference to terracing and methods of cultivation on hillside slopes adapted to preventing erosion, and with reference to the use of water as a fertilizer and stimulant to plant growth, and for the acquisition of lands that may be required for such purposes, and for any other purposes mentioned or referred to in section twelve of this act, ——— dollars.

For the Geological Survey, for topographic surveys and the measurement of streams and other hydrographic and hydrologic works, and for the examination of lands intended to be purchased under this act, and for any other things required by the board to be done in connection with any investigation or construction done under this act, ——— dollars.

For the Reclamation Service, for the building of irrigation systems to aid in the regulation of the flow of source streams or navigable rivers through the conservation, utilization, and ground storage of waters in irrigated lands, and for the acquisition and reclamation by irrigation or drainage of specific tracts of lands for intensive cultivation and settlement, and for the building of canals and ditches, and carrying to completion any and all methods of utilizing water for irrigation as a means for river regulation, and for any other purpose mentioned or referred to in section fifteen of this act, ——— dollars.

For the Forest Service, (a) for the protection from fire and insect infestation of national forests, where such protection is essential to the preservation and maintenance of water supplies, and for the acquisition of lands within or near existing national forests or other lands which are necessary to the adequate protection of water supplies, and for building the necessary roads, trails, fire lines, fire-protection stations, telephone lines, and for any and all other things required for such fire protection, including the fighting of fires and the employment of forest guards and rangers, ——— dollars.

(b) For the protection from fire of the forested watersheds of navigable streams, for the organization and maintenance of a system of fire protection on any private or State forest lands situated upon the watershed of a navigable river, in cooperation with any State or group of States, as provided for in an act entitled "An act to enable any State to cooperate with any other State or States, or with the United States, for the protection of the watersheds of navigable streams and to appoint a commission for the acquisition of lands for the purpose of conserving the navigability of rivers," known as the Appalachian National Forest act, and also in direct cooperation with cities, counties, towns, villages, and other owners of woodlands and forested areas on watersheds, and wherever essential to the preservation of water supplies and for the protection of such forested watersheds and areas from insect infestation, ——— dollars.

(c) For the protection, perpetuation, enlargement, maintenance, regulation, and control of water supplies by the establishment and maintenance of forest nurseries, the planting or replanting of forests, the reforestation of denuded areas, the carrying out of silvicultural improvements in the national forests, and the establishment and maintenance of forest plantations and parks and the acquisition of lands therefor to provide instruction in the planting and care of trees and forests for the purpose of awakening and maintaining a local interest in and knowledge of the relation of forests to the preservation of water supplies and stream flow, —— dollars.

(d) For the acquisition of forest lands by and through the National Forest Reservation Commission as and in the manner provided for in the Appalachian National Forest act above referred to, subject to all the conditions and requirements contained in said act, five million dollars.

Provided, That the provisions of the said Appalachian National Forest act shall, after the expiration thereof by limitation, still continue and be in force with reference to all moneys made available for expenditure thereunder by this act, either for fire protection or for the acquisition of forest lands.

For the Corps of Engineers, United States Army, for building bank protective works to prevent erosion and cutting of the banks and consequent caving, and to control the river and hold it in a permanently fixed and established channel, and for building and maintaining revetments, dikes, walls, levees, embankments, gates, wasteways, by-passes, flood-water canals, restraining dams, impounding basins, and bank-protective works for river regulation, and, as a means to that end, the building of works for reclamation, drainage, and flood protection, and for building reservoirs and artificial lakes and basins for the storage of flood waters to prevent and protect against floods and overflows, erosion of river banks, and breaks in levees, and to regulate the flow of source streams and navigable rivers, and reenforce such flow during drought and low-water periods, and for the operation and maintenance of the same, $30,000,000.

Owing to the short period of time available for the preparation of the report, I present the debate in the Senate during the closing days of the third session of the Sixty-second Congress upon an amendment presented by me to the river and harbor bill adopted by the Senate, which amendment contained a condensation of the provisions of the river-regulation bill, which, in somewhat various forms, I have been urging upon the attention of Congress for the past six years. This debate shows the history of the river-regulation or inland-waterways movement, and during it I had the opportunity of placing in the Record the indorsements of this policy by the political parties, by State legislatures, by the chiefs of the executive departments, waterways associations, chambers of commerce, boards of trade, etc. I have thought it best to present the matter in this form, for the debate will give a realizing sense of the difficulties to be overcome in the consideration of legislation of this character.

REMARKS OF HON. FRANCIS G. NEWLANDS, OF NEVADA, IN THE SENATE OF THE UNITED STATES, FEBRUARY 20, 21, 22, AND 24, AND MARCH 1, 1913.

Proceedings of February 20, 1913.

BOARD OF RIVER REGULATION.

Mr. NEWLANDS. Mr. President, I present a resolution adopted by the Legislature of the State of California, memorializing Congress to pass the bill to create a board of river regulation, which I had the honor to introduce early in this session.

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The PRESIDENT pro tempore. Without objection, the resolutions will be printed in the Record.

(The resolutions are as follows:)

CALIFORNIA LEGISLATURE, ASSEMBLY,
Sacramento, February 6, 1913.

Hon. FRANCIS G. NEWLANDS,
United States Senate, Washington, D. C.

DEAR SIR: I have the honor to hand you herewith a copy of a resolution adopted by the Assembly of the State of California on the 4th day of February, 1913.

Very truly, yours,
L. B. MALLORY, *Chief Clerk.*

The following resolution was offered by Mr. Gulberson:

"Whereas a bill has been introduced in the Senate of the United States by Hon. Francis G. Newlands, of Nevada, which, according to its title, proposes 'to create a board of river regulation and to provide a fund for the regulation and control of the flow of navigable rivers in aid of interstate commerce, and as a means to that end to provide for flood prevention and protection and for the beneficial use of flood waters and for water storage and for the protection of watersheds from denudation and erosion and from forest fires, and for the cooperation of Government services and bureaus with each other and with States, municipalities, and other local agencies'; and

"Whereas it has been proposed by the leading supporters of said bill that it be amended so as to provide for an appropriation of $5,000,000 annually for 10 years for the control of the Sacramento and San Joaquin Rivers and their tributaries and for a like appropriation for the control of the Colorado River; and

"Whereas this legislature is in hearty accord with the principles embodied in said bill and believes that the money proposed to be expended under it and the cooperation provided for in it will promote the general welfare; and

"Whereas the vastness and variety of the interests that will be benefited by the expenditures contemplated in the proposed amendments fully justify such participation by the National Government in the work of making the navigable streams of California as useful as possible to the public: Therefore be it

"*Resolved by the Assembly of the State of California,* That the Congress of the United States be, and both branches of said body hereby are, requested to pass said bill, with the amendments aforesaid, and that the Representatives of California in the Senate and the House of Representatives be requested to use their best efforts to that end; and be it further

"*Resolved,* That the chief clerk of the assembly be, and he hereby is, directed to send a copy of this resolution to each Senator and Representative in Congress from this State, to Hon. Francis G. Newlands, to the Vice President of the United States, and to the Speaker of the House of Representatives."

Adopted this 4th day of February, 1913.

L. B. MALLOREY, *Chief Clerk.*

PHILADELPHIA BOARD OF TRADE,
ORGANIZED 1833,
Bourse Building, Philadelphia.

To the honorable the Senate and House of Representatives of the United States in Congress assembled:

This memorial of the Philadelphia Board of Trade respectfully represents:

That through its committee on inland transportation it has examined the provisions of Senate bill No. 122, introduced by Senator Newlands, having for its purpose the creation of a board or river regulation with the view of securing the maintenance by the Federal Government of an adequate levee and bank-revetment system in the low States bordering the Ohio and Mississippi Rivers and for the ultimate adoption of a policy of stream control which shall check and minimize the formation of floods, which have proved so disastrous in the loss of life and property;

That the yearly damage caused by preventable floods in the drainage basin of the Ohio River and the damage caused by the great flood of 1912 in the Mississippi Valley certainly justify the most liberal appropriations and the most careful study for their causes, with the view of securing remedial measures for their prevention;

That Philadelphia, while far removed from the territory affected by these floods, sympathizes with the sufferers therefrom, and believes that in the last analysis the great losses affect unfavorably every business interest, and the General Government is called upon to aid by legislation in securing for the afflicted sections of the country immunity from the recurrence of these devastating floods: Therefore

Your memorialist, the Philadelphia Board of Trade, petitions your honorable bodies to favorably consider and pass Senate bill No. 122, known as the "Newlands river regulation bill."

And your memorialist will ever pray.

PHILADELPHIA BOARD OF TRADE,
[SEAL.] WILLIAM M. COATES, *President*.

Attest:
W. R. TUCKER, *Secretary*.

* * * * * * *

Mr. NEWLANDS. Mr. President——

The PRESIDENT pro tempore. Does the Senator from Ohio yield to the Senator from Nevada.

Mr. BURTON. Yes.

Mr. NEWLANDS. May I call the attention of the Senator from Ohio to the fact that I have an amendment pending providing for exactly what the Senator suggests may be desirable, the creation of an ample fund and the cooperation of the various services that relate to water and the cooperation of the various sovereigns affected, so that the jurisdiction and the powers and the moneys of all are united in a great work of river regulation and its promotion as instrumentalities of transportation. I shall hope to have the help of the Senator from Ohio in my effort to have that amendment put upon this bill.

Mr. BURTON. Mr. President, the reference that I made was to the cost of the maintenance of public works. I would not feel like going so far as to abdicate the functions of Congress relating to the selection of projects or relating to the general policy as to the amount to be expended. Perhaps at a later time I may make a few remarks on the bill of the Senator from Nevada, with which I am quite famailiar. I know he has given a great deal of time and labor to it. But the central idea of his bill is to turn the whole subject over to the executive department, appropriating a lump sum for each year, and authorizing a commission or board to expend it as they choose. I should not feel like going so far.

Mr. NEWLANDS. I wish to call the attention of the Senator to the fact that the amendment provides that these plans shall be made through the cooperation of the services that are now working in a detached way in relation to our rivers, but that the plans must be approved by Congress. Of course those plans will involve a complete statement of each project and the amount necessary for the completion of that project and the installment amount that will be required during the session at which the report is made.

* * * * * * *

Mr. NEWLANDS. Mr. President, the debate which has taken place regarding this amendment, taken in connection with the practical admission of the Senator from Ohio [Mr. Burton] that the system hitherto pursued regarding river and harbor appropriations has broken down, indicates the necessity of some legislation that will enable the treatment of a river in such a way as to make it beneficial for every public use, the necessity of legislation which will bring about cooperation between the sovereigns having jurisdiction over detached uses of our waters, so as to bring about their highest development, with a view to meeting all the demands of civilization.

Mr. President, the Senator from Ohio has been for the last three or four years presenting his indictment not only against the bills providing for rivers and harbors, but against the system which has grown up with reference to the development of rivers and harbors, and yet for years, in the House of Representatives, that Senator was chairman of the Rivers and Harbors Committee and was a dominant figure in all legislation relating to the development of rivers and harbors. The bills which were brought in there were in the main satisfactory to him. The bills which were finally passed were in the main satisfactory to him. The system which has thus far prevailed is the system for which the Senator from Ohio, as chairman of the Rivers and Harbors Committee of the House, is and has been largely responsible.

Mr. BURTON. Will the Senator from Nevada yield to me?

Mr. NEWLANDS. Certainly.

Mr. BURTON. I think the Senator did not hear what I said this morning when I pointed out the difference in policy at the time I was chairman of the Rivers and Harbors Committee of the House—a very essential difference—that of not beginning projects unless provision was made for their completion. As a result of that there were many less projects, and I maintain they were very much more carefully selected than has been the case in the recent bills. That policy was not absolutely pursued during the early years, from 1889 to 1902, because it was impossible to remodel or reform the existing system. If the Senator from Nevada will do me the kindness to read the report on the bill of 1907, which will appear in the Record of to-morrow morning, he will see how very clearly the point was at that time presented.

Mr. NEWLANDS. I wish to say, Mr. President, that the remark I was making did not involve criticism of the Senator from Ohio. I was about to add that the system of river and harbor improvements pursued under his guidance in the House of Representatives was vastly improved. When he took hold of the leadership of this subject there, a system prevailed called the "pork-barrel" system, a system with which we are all familiar, and which it is unnecessary to describe.

We had the pork barrel in projects just as we had it in offices, and the aim of thoughtful men was to substitute the merit system, both in projects and offices.

We have made great progress with reference to offices. We have made great progress with reference to projects. Every year has witnessed an advance in the merit system as applied to both. The Senator from Ohio is to be complimented for the great work which he undertook in this direction in the House. The Corps of Engineers through his efforts was made a dominant figure in all the plans with regard to rivers and harbors and their execution. A board of review was established, before which doubtful projects were tested, and without whose approval legislation was rarely initiated; a steady and gradual advance was made, not only in effective planning, but in effective work.

But in the very nature of things the great enterprise of developing a river for navigation can not be successfully pursued unless there is a single power or a combination of the various powers having jurisdiction, and unless the development of the river can be so planned and executed that the various uses of the river, including the works necessary to develop such uses, dovetail into each other.

So river improvement has broken down. It is to-day ineffectual for the purpose which Congress has in view in the exercise of its interstate-commerce power, namely, the promotion of navigation. It has been just as ineffectual in the development of a complete waterway as the action of a railroad company would be in the construction of a railway in detached portions here and there, a stretch of 10 miles here and a stretch of 10 miles there, without any connection between the various structures.

So far as the question of expenses is concerned, the full development of a river within rational limits of expenditure depends upon every remunerative use of that river and the development of every remunerative use. The Congress of the United States under its jurisdiction can consider only one use of the river, and that is its use for navigation. Yet there are numerous profitable uses. There is the use of the water for irrigation; there is the use of the water for the development of water power and of hydroelectric power; there is the control of the water in such a way as to redeem vast areas of swamp land and make them profitable. Yet the Nation has jurisdiction over only one of these uses, the use for navigation. It is denied the opportunity of entering upon these other uses, which would be largely compensatory of the cost of the projects, though by reasons of its ownership of the public domain it has been in a limited degree able to embrace irrigation in its works, as a means of preparing its arid domain for settlement.

Now, under what jurisdiction are these other uses? They are under the jurisdiction of the State. Therefore we have the jurisdiction and the control over our rivers divided between the national sovereignty on the one side and 48 different States on the other.

Correct planning requires that these sovereigns shall get together by some process so that they can cooperate in plans and works and so that individuals acting as the agents or under the authority of each sovereign can so develop their respective works as to make them dovetail into each other and thus reduce the cost for each separate use.

Can there by any doubt, Mr. President, but that if a private corporation owned the great Mississippi River and all the areas which it traverses, including its tributaries, such a corporation would view that entire river, with all its tributaries and source streams, as a unit, and that in contemplating the development of that river for one useful, beneficial, and profitable use it would consider how far the other uses could be developed in such a way as to be either wholly or partly compensatory? Yet for 100 years we have been moving along this line of individualized effort and the system has broken down. The question still is, How can we develop our rivers for navigation and make them useful in the transportation of the country?

Of course, the influence of the railways has been against this throughout. For many years our railroads were almost overdeveloped. They were greedy for traffic, greedy for transportation, and wherever they had the opportunity they would run the waterways out of business by unfair methods. The spectacle was presented of the Nation permitting one of its servants to club another public servant out of the opportunity for usefulness. So we find that the influence of the railways has been against the development of waterway transportation. It has not been against the development of our rivers, provided it could be done in an ineffective way. They did not object so much to the expenditure of public moneys for the development of our rivers as they objected to this expenditure in an ineffective way.

So throughout the years we have been going along with this ineffectual method of taking up individual projects here and there as a part of the spoils system, without comprehensive plans involving the union of all the services in the country that relate to water and involving the union of all the sovereignties that have jurisdiction over the subject.

Mr. President, if we will look at the map which hangs upon the wall we will find that, generally speaking, there are about eight or nine great watersheds or drainage areas in this country. Commencing at the Atlantic coast, we find the Atlantic waterways all running into the Atlantic Ocean or into the bays and sounds connected with the Atlantic Ocean. The scientific treatment of that coast involves comprehensive plans which will insure the construction of an inland waterway connecting with all the rivers from Massachusetts Bay, through Cape Cod, down to Florida, stretching through Long Island Sound, Delaware River and Bay, Chesapeake Bay, Pamlico Sound, and then, after passing through Florida by a canal, extending its way to a similar inland waterway upon the coast of the Gulf, and there connecting with the next watershed, the Mississippi watershed, a watershed covering nearly two-thirds of the area of the entire country, embracing not only the Mississippi River but all its tributaries from the Great Lakes down to the Gulf, and from the Appalachian and Allegheny Mountains on the one side to the Rocky Mountains on the other.

All the waters that fall upon that vast area are emptied into the Gulf of Mexico through a narrow pass which you will see depicted upon the map near New Orleans, where the Mississippi River makes its way out through the Passes into the Gulf of Mexico. And so this vast mass of water falling from the heavens in the various seasons of the year, capable of being used everywhere for benefaction, is allowed uncontrolled to drift below, to the destruction of towns and cities and vast cultivable areas.

Now, what purposes of benefaction can it be used for? Above, in that vast semiarid area, the flood waters can be led over the plains and used for purposes of cultivation and production, thus diminishing the flood when it is destructive and feeding the stream later on through the slow processes of percolation when the water is needed for purposes of navigation.

Then, below, what use can the regulation of this water be put to? In the reclamation of a vast area of alluvial soil, stretching all the way down from the Missouri on both sides of the river to and including Louisiana. The productiveness of an area of vast fertility is almost annually arrested by these very waters, when, if arrested above, and either stored artificially for power or led over the lands for the purpose of irrigation, would be most beneficial in the increase of wealth and prosperity.

Mr. President, what is the problem, then, of the people of Louisiana, and Mississippi, and Tennessee, and Arkansas, and Missouri?

There the difficulty is too much water. What is the difficulty away out in the semiarid regions in the upper reaches of the Missouri and the Platte and other rivers tributary to them? Too little water. What is the difficulty in the Mississippi region? The difficulty there is that these waters are allowed to pursue their course in a period of flood and to wash the banks into the streams, creating obstructions to navigation. Finally, they rush down in the lower reaches of the river and threaten great cities and towns, protected by enormous levees, in some cases extending even to the height of the houses. Substantially all that we have done has been to treat the lower part of the river, to take hold of the floods after they have reached the lower part of the river, and to arrest their spread over the adjoining lands by levee protection, that involving also bank protection through revetment work as a means of preventing the destruction of the levees themselves by bank caving. So we have been spending millions of dollars down there, not in any connected plan relating to navigation, but simply with a view of protecting these areas and these cities and these towns from overflow as a result of floods, which floods, if utilized above, would be turned into beneficial agencies.

So it is to the west. We have the watershed of the Rio Grande depicted upon the map taking its source in the arid region and emptying into the Gulf of Mexico. Then farther on we have the watershed of the Colorado running into the Gulf of California; both of these rivers capable of being navigated; both of them capable of the use of their waters most extensively for irrigation and the development of water power. Further, we have the watershed of San Francisco Bay depicted on the map, with the Sacramento and its tributaries, the San Joaquin River and its rivers, commanding the most fertile valley in the world, emptying into San Francisco Bay, which in turn empties, through a narrow gorge called the Golden Gate, into the Pacific Ocean. There the same problems of irrigation, water power, swamp-land reclamation, and navigation confront us, the solution of each aiding in the solution of all; one half of this vast area thirsty for the waters which fall on the other half, and which can be diverted from their mad race to the ocean and applied to the development of power and the cultivation of the arid soil. Then we have to the north of that drainage area the watersheds of the Columbia and Snake Rivers, the Snake being a tributary of the Columbia. These two rivers traverse the States of Washington, Oregon, Idaho, and western Montana, and are capable of being used both for navigation and irrigation and for the development of water pawer. Yet our course thus far has been to bring in simply a river and harbor bill one half or more of which is devoted to appropriations for harbors and the other half to appropriations for rivers, the latter made in such a way as to take care of simply detached localities here and there, without any comprehensive or collective planning that would result in these rivers, from their sources to their mouths, being used for all the beneficial purposes to which they can be put.

Mr. President, a movement has been going on for the last seven or eight years in the line of the development of natural resources. It was inaugurated during the administration of Mr. Roosevelt, and constitutes one of the most creditable policies of his administration. An Inland Waterways Commission was appointed by him, without statutory authority, about seven or eight years ago. It was appointed under his power of recommendation to Congress relating to legislation. As it served without compensation, it was no burden upon the Public Treasury; in fact, it had no statutory existence.

The Senator from Ohio [Mr. Burton], then a Member of the other House, was a member and chairman of that commission. The then Senator from Missouri, Gen. Warner, and myself constituted the senatorial representation on that committee. There was also on that commission the present Senator from Alabama [Mr. Bankhead], who then was a Member of the other House. In addition to that, the chiefs of the various scientific services were members of the commission—the Chief Forester; the Chief of the Reclamation Service; the Chief of the Bureau of Corporations, at that time engaged in an exhaustive study of water transportation; a representative of the Bureau of Soils of the Agriculture Department; and the Chief of Engineers of the Army. From their report, from which I shall insert extracts in the Record, you will find that they recommended the treatment of a river as a unit from source to mouth, with all of its tributaries; cooperation between the Nation and the States in plans; cooperation between the Nation and the States in work, each within its jurisdiction, and with such apportionment of costs and benefits as would properly apportion to each jurisdiction the cost belonging to it and to each jurisdiction the benefits belonging to it. They recommended teamwork upon the part of the sovereigns, and they recommended teamwork upon the part of the services that relate to the use of water.

We found that the Engineer Corps of the Army alone had control of the improvement of our rivers, yet we found numerous other scientific services which were engaged in study or work in some way regarding the waters of the country. The Geological Survey, through its engineers, was engaged in the study throughout the entire country of all of the phenomena relating to water. The Reclamation Service was engaged at the upper reaches of these very navigable rivers, taking out the waters over the arid and semiarid plains in canals and storing them up in enormous structures for the purpose of irrigation. Then the Forest Service was engaged in its study relating to the usefulness of the forests themselves in the conservation of water, the services which the forests perform in absorbing the moisture and letting it out gradually into the small streams through which it finds its way into the navigable rivers, instead of permitting the precipitation to rush hastily to the large rivers, where its destructive force would be injurious both to navigation and to agriculture. All these various scientific services—the Reclamation Service, the Geological Survey, the Weather Bureau, the Forestry Service, the Drainage

Service, the Coast and Geodetic Survey, and the Engineer Corps of the Army—engaged in the study of matters relating to waters were working in a detached way, without consultation with each other and without union either of plans or of work, each of them jealous of the jurisdiction of the other, each of them resisting any invasion of its own jurisdiction, and all of them more or less at war with each other, although they were all the servants of the Government.

We concluded that the first thing to do was to bring them into cooperation through a board consisting of the chiefs of these services, who, aided perhaps by a hydroelectric engineer, a hydraulic engineer, and a sanitary engineer, would study in a connected and related way all these questions relating to the use and the control of the water and present to the National Government a connected plan of works.

That report of the Inland Waterway Commission was signed by all its members. There were some qualifying words on the part of the Chief of the Engineer Corps of the Army; there were some qualifying words by myself, or, rather, words of enlargement, for I wished to create a commission of large powers to create a fund of $50,000,000 annually for 10 years for the development of our rivers and to give this board of regulation a free hand within the limits of our appropriation, simply providing that they should enter upon no work unless the money for its completion was in the Treasury. The other members of the commission believed in a large fund: they believed in the cooperation of the services; they believed in the cooperation of the Nation with the States: but some of them believed that Congress ought not to give, and some that Congress would not give, such an organization a free hand in plans and works, but that it should present its plans to Congress in detail and that those plans should be approved by Congress.

My recommendation was, in my judgment, in the line of efficiency and of celerity in the work, for we have pursued practically that system in the reclamation works of the country, where we gave the Secretary of the Interior, with the aid of a board of engineers, comparatively a free hand, and also in the construction of the Panama Canal, and both those works, in the general satisfaction which they have given the country, in my judgment, attest the wisdom of the plan.

There was no question on the part of any member of that commission that there should be cooperation between the services that relate in any degree to water; that there should be cooperation between the Nation and the States: that there should be an ample fund provided for continuous work stretching over a period of 10 years.

After that report was made the Conservation Congress was called at Washington at the White House. That congress was attended by almost all the governors of the States and by many men of distinction from every State in the Union. By a unanimous voice they declared in favor practically of this policy. Later on the political conventions met. The Republican convention in general terms, in 1908, indorsed this policy. The Democratic convention in express terms indorsed it, declaring specifically for the treatment of a river, with all its tributaries, as a unit; declaring specifically for the cooperation of the scientific services, for the cooperation of the Nation and the States, for a large fund, and for continuous work. Later on that policy in the last campaign was generally indorsed by the Republican Party and specifically indorsed in all its details by the Democratic convention and later by the Progressive Party convention.

During all this time waterways conventions have been held all over the country in which this general policy has been advocated. Boards of trade and chambers of commerce throughout the country have indorsed it, and there has been hardly a dissenting note, so far as the course of legislation is concerned.

Six years ago, in 1907, before the Inland Waterways Commission made its report, I presented a tentative bill in the Senate providing for the cooperation of the services, the cooperation of the Nation and States, a large fund, a regulating board, and continuous work. That bill had a hard time in the Committee on Commerce, of which I was a member, but finally, after a struggle, I got out a modified bill, unanimously reported by the Committee on Commerce, providing for an inland waterway commission, which was to make plans for works upon the lines which I have suggested.

Just about that time an unfortunate controversy arose between Mr. Roosevelt and Congress, in which an effort was made by withholding appropriations and forbidding the service of Government officials on these investigating commissions, and in other ways to check him in the lines that he was pursuing of independent investigation regarding the conservation of the natural resources of the country. As a result of that controversy, during the closing days of the session, when I was endeavoring day after day to bring up that modified bill for consideration, with the absolute assurance that if it once got before the Senate it would pass, its pathway was obstructed by two eminent members of the Republican Party of the Senate and by two eminent members of the Democratic Party, who stood on watch to prevent its consideration.

I wish to say that during that time a fuller and more complete bill which I had offered was referred to the then Secretary of War, Mr. Taft, for his report, and while at that time the Corps of Engineers was hardly friendly to this idea, for it involved in some degree, as they regarded it, though I think mistakenly, a trespass upon their jurisdiction, Mr. Taft made a report, extracts from which I shall insert in the Record, in which he unqualifiedly indorsed this policy, and said that the time had come for comprenhive plans involving the intelligence and the energies of all the services involved and all the sovereigns involved. That bill was never reported. Since then at every Congress I have introduced a bill of a similar nature, and have sought by amendment to the river and harbor bill to secure action upon this subject. It is only recently that we have seen the dawn of a new light in that committee.

I am sorry the Senator from Minnesota [Mr. Nelson], the chairman of the Commerce Committee, is not in his seat, but I do not think that I do him an injustice when I say that for some time he looked upon this enlarged policy with great caution; and yet the other day, as the result of his experience with reference to these bills, he declared that in the future he would favor enlarged action upon this subject: that he was against the consideration of these questions in the detached way in which they have been considered, and would favor the organization of a board or commission and the creation of a large fund. He went so far as to declare that he would leave the expenditure of that fund to the members of that commission as a means of securing more comprehensive and more effective results than those attained under the present system. The Senator from Minnesota is in his seat now, and I ask him whether I have correctly stated his position upon this question?

Mr. NELSON. Mr. President, in answer to the kindly question of the Senator from Nevada, I beg leave to say that, in a general way, the Senator has expressed my sentiments. I have come to the conclusion that we could do much better work and should squander less money if we appropriated a gross sum and placed it in charge of a board of five or seven competent Army engineers with power to determine what improvements should be made, and where, in our rivers and harbors.

While a great many of the improvements we are making are fully justified in the interests of navigation, yet my observation has led me to believe that in a great many instances we really squander money; it is wasted on improvements that never ought to have been made; but what can we do? Representatives and Senators are clamorous; they introduce their bills and it is utterly impossible to resist them. I think it would require almost supreme power to infuse a new spirit into Representatives and Senators, as well as into the American people, to bring about a reform. I think the work should first be started through our great newspapers and the magazines, from the pulpit, and along educational lines, to infuse people with a new spirit, with less of the spirit of Mammon, so that we would all come to look upon this question just as we would if it were our own business. I am sure that if we were to look upon river and harbor improvements as though it were a matter of our own, and the money came out of our own pockets, we would in many instances refrain from scattering the money as it has been scattered in the case of many improvements.

I owe an opology to the Senator from Nevada for taking up so much time. I should be glad if the Senate would allow me to have a vote on my amendment.

Mr. BRANDEGEE. Mr. President——

The PRESIDENT pro tempore. Does the Senator from Nevada yield to the Senator from Connecticut?

Mr. NEWLANDS. Certainly, I yield.

Mr. BRANDEGEE. Mr. President, I desire to send a proposed amendment to the amendment to the desk, which I shall offer at the proper time. I do not care to puncture the address of the Senator from Nevada, but at the conclusion of his remarks I shall ask that the amendment be read to the Senate.

Mr. NEWLANDS. I did not catch the last remark of the Senator.

Mr. BRANDEGEE. I will ask that the amendment be read to the Senate after the Senator from Nevada has finished.

Mr. NEWLANDS. Mr. President, I will state to the Senator from Minnesota that I will not delay him long in the consideration of his amendment. I call attention to the remarks of the Senator from Minnesota, who has long served upon the Commerce Committee of the Senate, who has had a large experience in the development of our rivers, who has served on committees that have made investigations of the Mississippi, the Missouri, and other rivers, and whose experience has probably been as large as that of any Member of this body. He testifies to the ineffectiveness of the present system, and the Senator from Ohio [Mr. Burton] has also testified to it. I caught a few of the latter's phrases. He said there has been lack of care in the selection of projects and lack of care in methods.

He speaks of the ineffectiveness of expenditures already made, but he also speaks of the experimental side of this question as if we had to go through a further period of experiment before we could agree upon an effective system.

Mr. President, I claim that the period of experiment has expired. We have been experimenting with this question for over 100 years. We know that other nations have dealt with it successfully. We know that in France river transportation and canal transportation and railway transportation all are coordinated and each has a proper place in their system of transportation. We know that in Germany they have pursued their waterway development side by side with their railway development and their ocean transportation development, and they have conducted them all in such a way as to make them dovetail into each other, the waterway transportation cooperating with the railway transportation, and both of them cooperating with ocean transportation in such a way as to diminish the inconvenience and the cost, and in such a way as to make Germany's course absolutely triumphant in the advancement of its commerce.

Waterway transportation is no new thing. Our only difficulty is that we have not improved and developed our waterways in any consecutive method. We have allowed the railways to sandbag the waterways. We have allowed one public servant to destroy another public servant. The result is that these two servants do not cooperate in the service of the country, but the efficiency of the one has been practically destroyed by the monopolistic and destructive efforts of the other.

There is no reason why we should not make the same study in this country that Germany has made of the complete development of waterway, railway, and ocean transportation, and the first step in that direction is the proper development of our inland waterways.

We have to-day the Panama Canal, a connecting link between the waterway systems of the Pacific coast, the Atlantic coast, and the Gulf coast, including the entire valley of the Mississippi River. There is no reason why in the future vessels of standard draft should not start from St. Louis, go down the Mississippi River, through the canal, up to the Pacific coast, up into San Francisco Bay, and up both the Sacramento and the San Joaquin Rivers. There is no reason why they should not pursue the same course regarding the Columbia and the Snake Rivers, connecting as they do four States and reaching far into the interior. There is no reason why this entire system should not be planned in such a way as to secure a contemporaneous development of the reclamation of our swamp lands, the reclamation of our arid lands, the development of our forests, and the development of hydroelectric power, which is daily becoming more and more a factor in our domestic life and entering into domestic activities more than any other force.

When I interjected something of this kind this morning, while the Senator from Ohio [Mr. Burton] was speaking, and urged the importance of dealing with the subject in a large way through a commission of experts, the distinguished Senator said something about "abdicating legislative functions." Is it a legislative function to do executive work?

All this is work of planning and of construction. It is simply a proper exercise of our legislative functions to create an effective organization for doing effective executive work and to give that organization large and comprehensive powers so that there will be not only plans made but work done. If we allow such an organization to be hamstrung all the way along by the agencies of obstructive legislation, we shall never secure substantial results.

Mr. President, I know the Senator from Minnesota is anxious to have a vote, and I shall not at this time conclude what I have to say. I shall only say, with reference to this particular provision in which the Senator from Minnesota is interested, regarding a cooperative arrangement between the National Government and the State of Minnesota regarding a dam promotive both of navigation and water power, that it illustrates and accentuates everything I have been saying. His admendment proposes practically a cooperation between the Nation and a State in the utilization of a structure to be placed in a river in such a way as to meet the demands of the national jurisdiction in the promotion of navigation and to meet the demands of the State jurisdiction in a matter of proper domestic development.

Why should the Senator from Minnesota be compelled to come here to Congress with this specific project and ask our assent? Why should any Senator or Representative be compelled to come here with reference to every project of this nature when by general legislation we can provide for cooperation between the Nation and the States and provide a fund under which that cooperation may be accomplished? Why should the time of the Congress of the United States be taken up in the constant discussion of individual projects here and there all over the United States, which may be multiplied indefinitely if we once enter upon the question, when by turning the matter over to a competent board, with ample funds, as we did the Panama Canal and the reclamation work, we will secure not only more effective results but more speedy results?

This very bill shows, by the analysis presented to me by the Corps of Engineers, that nearly $37,000,000 is to be expended, of which over $14,000,000 goes for harbors and about $23,000,000 for rivers. That has been somewhat increased by the amendments of the Senate committee, aggregating some three or four million dollars additional. Twenty-two million dollars is appropriated in this bill for the regulation of rivers, and you will find that, of all that $22,000,000, $15,000,000 is to be spent upon the Mississippi River and its tributaries.

With the consent of the Senate, I will put in the Record this analysis of the bill as it passed the House, made at my request by the Corps of Engineers. My idea was to group the appropriations for rivers made in the river and harbor bill, not under the head of States but under the head of the respective drainage areas or river systems, considering every river with its tributaries as a unit.

We are already entering upon this work in a large way, but we are entering upon it in a detached way, in an unscientific way, in a way that will not bring substantial and speedy results. Is it not time for us now to graft upon this very bill an amendment which will create a river-regulation board, which will appropriate $5,000,000 annually for the plans and works of that board until the Panama Canal is completed, and which will then provide a fund of $50,000,000 annually for 10 years; which will provide for the cooperation of the Nation with the States; which will provide for the cooperation of the scientific services; and which will secure full development, by the cooperation of the Nation and the States, of all the waterways of the country, in every section of the country, giving preference to no section, but providing, as we did with reference to the Reclamation Service, that, so far as practicable, contemporaneous work shall be conducted in all sections of the country?

We will thus lighten the labors of Congress, which are now becoming so heavy, and, with other reforms, we may hope to see the time when we can transact the public business without remaining in Washington throughout the entire year, and transact that business more effectively than we do now.

This is an era of scientific inquiry and of scientific and expert work. All the great agencies of civilization are now employing the experts everywhere. This method lies at the bottom of corporate success. It lies at the bottom of almost every successful enterprise. Why should we, claiming that an American can do everything and upon the plea that we should not abdicate our functions, endeavor to cover by our individual deliberations and individual actions all the expert work that at great Nation can enter upon?

In this great era of industrial advancement can not Congress pursue the methods of the great men in finance and in corporate activities, who utilize to the highest extent the intellects of others—experts in their various capacities—and thus maintain undiminished their strength and their power? Must we always go through our legislative functions overloaded, as we are to-day, by details that can well be intrusted to others, and that ought to be intrusted to others? It is characteristic of great minds to utilize the brains of others, and only in that way can great accomplishment be reached.

The Senator from Minnesota is desirous of securing a vote on his amendment, and I will not at this time detain the Senate further. The proposal of the Senator presented such an object lesson of the necessity of a broad cooperative policy that I could not forbear making some comment which will, I trust, be instructive in the consideration of the amendment which I will offer to-morrow, and the insertion of which I should like to be made in the Record.

(The amendment referred to is as follows:)

Amendment intended to be proposed by Mr. Newlands to the bill (H. R. 28180) making appropriations for the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes, viz:

After line 10, page 65, insert the following:

SEC. 2½. That for the regulation and control of the flow of navigable rivers in aid of interstate commerce, and as a means to that end for the storage of flood waters in the watershed of such navigable rivers, including the beneficial use and control of such flood waters, in the maintenance so far as practicable of a standard flow for navigation, the reclamation of arid and swamp lands, and the development of water power; and for the protection of watersheds from denudation, erosion, and from forest fires, and for the cooperation of Government services and bureaus with each other and with States, municipalities, and other local agencies in plans and works, having in view such river regulation and control, the sum of $5,000,000 annually for each of the years following the 1st of July, 1913, and up to the date of the completion and opening to commerce of the Panama Canal, and thereafter the sum of $50,000,000 annually for each of the 10 years following the completion of the Panama Canal, is hereby reserved, set aside, and appropriated and made available until expended, out of any moneys not otherwise appropriated, as a special fund in the Treasury to be known as the river-regulation fund.

That of the said river-regulation fund, until otherwise directed by law, one-tenth thereof shall be apportioned to the rivers on tht Atlantic coast, one-tenth thereof to the rivers on the Gulf coast outside of the Mississippi River, one-fifth thereof to the Mississippi River from St. Louis to the Gulf, one-tenth thereof to the Missouri River and its tributaries, one-tenth thereof to the Ohio River and its tributaries, one-tenth thereof to the upper Mississippi River above St. Louis and its tributaries, one-tenth thereof to the Sacramento and San Joaquin Rivers and their tributaries in California, one-tenth thereof to the Columbia and Snake Rivers and their tributaries in Oregon, Washington, and Idaho, and one-tenth thereof in the connection of the Great Lakes with the Ohio and Mississippi Rivers.

That a board is hereby created, to be known as the board of river regulation, consisting of the Chief of Engineers of the United States Army, the chairman of the Panama Commission, the chairman of the Board of Review of the Engineer Corps of the Army, the chairman of the Mississippi River Commission, the Director of the United States Geological Survey, the Chief of the Weather Bureau, the Forester of the Department of Agriculture, the Director of the Reclamation Service, the Chief of the Drainage Division of the Department of Agriculture, the secretary of the Smithsonian Institution, one hydraulic engineer, one sanitary engineer, and one electrical engineer; the last three to be appointed by the President and to hold office at his pleasure, and each to recive an annual compensation of $7,500, payable out of the river-regulation fund.

The Chief of Engineers shall be the chairman of such board, and the secretary shall be annually elected by the board from its members.

That the functions of said board shall be to investigate and obtain full information concerning all matters involved in or specifically related to the objects set forth in this section, and for such purpose is authorized to expend a suitable and necessary proportion of the moneys therein appropriated; but said board shall not expend or incur liability for the expenditure of any money for the construction or execution of plans or projects without the specific approval of Congress as hereinafter set forth; that said board is hereby authorized and directed to enlist, through the President, the services of any Federal department or bureau the statutory authority of which may involve investigations or constructive work that is necessary or desirable in the comprehensive performance of the objects set forth in this section, and to bring into cooperation and to harmonize and unify the work of said departments or bureaus as may be necessary to provide against duplication or unwarranted or incomplete work with respect to the objects herein provided; and that said board is authorized to defray the expenses of such investigations or assistance to the extent of the ultimate cost thereof to said departments or bureaus through a transfer of equivalent proportions of the appropriation herein provided.

That the board shall develop, formulate, and prepare plans for the accomplishment of the purposes herein provided and shall report the same to Congress annually and at such other times as may be required, and whenever the recommendations or any parts thereof in said report shall receive the approval of Congress the said board shall proceed to construct and execute the same in accordance with the plans so approved: *Provided*, That the provisions of this section shall be so administered as in no way to supersede or conflict with any specific provisions which Congress shall from time to time make by way of appropriations other than such as are made by this act for work and improvements to be performed or maintained by the Corps of Engineers, United States Army, but that all work prescribed under this section shall be supplemental to and coordinated with the work as specifically prescribed by Congress in other acts.

That the board shall in all cases where possible and practicable encourage, promote, and endeavor to secure the cooperation of State and local government bodies, public and quasi public corporations, private associations, and persons in carrying out the purposes and objects of this act, including the securing of the financial cooperation of said parties; that it shall negotiate and arrange plans for the apportionment of work, costs, and benefits, and to secure the agreement and consent of said parties, contingent upon the final approval of same by Congress as herein provided, which approval and consent may include the acceptance and use of any funds or property donated or subscribed or in any way provided for cooperative work; but no moneys shall be expended under any arrangement for cooperation approved by Congress until the funds to be provided by the parties to such arrangement shall have been made available for disbursement."

Proceedings of February 21, 1913.

Mr. Newlands. Mr. President, I understand from the Senator from South Dakota [Mr. Crawford] that he was mistaken in his statement yesterday that the memorial of the Legislature of South Dakota urging the passage of the bill known as the Newlands river-regulation bill was printed. I therefore ask that the memorial be printed in the Record.

The President pro tempore. Without objection, that order will be made.

Mr. Crawford. The statement of the Senator from Nevada is correct. I presented some memorials from the legislature of my State and they were printed in the Record. It was my recollection that this memorial was included with them, but I discover that it was not. I would be glad to have it printed in the Record.

(The memorial was ordered to lie on the table and to be printed in the Record, as follows:)

State of South Dakota,
Department of State.

United States of America,
State of South Dakota, ss:

I, Frank Glasner, secretary of state of the State of South Dakota, do hereby certify that the annexed bill, to wit, senate joint resolution No. 14, was duly passed by the 1913 session of the Legislature of the State of South Dakota and is now in full force and effect.

In testimony whereof I have hereunto set my hand and affixed the great seal of the State of South Dakota this 4th day of February, A. D. 1913.

[seal.]

Frank Glasner,
Secretary of State.
By J. T. Nelson,
Assistant Secretary of State.

Joint resolution and memorial requesting the Congress of the United States to pass the Newlands bill, relating to river regulaion.

Be it enacted by the Senate of the State of South Dakota (the House of Representatives concurring):

Section 1. That the Congress of the United States is hereby memorialized to enact during the present session the Newlands bill, providing for the creation of a board of river regulation and for the control and beneficial use of flood waters, and we urge our Senators and Representatives in Congress to employ their best efforts to accomplish this end.

Proceedings of February 22, 1913.

The Senate had under consideration the river and harbor bill (H. R. 28180).

Mr. Newlands. Mr. President, I should very much question whether this item is subject to a point of order. Here we have an existing appropriation providing for the narrowing of the flood area of the Mississippi River opposite Memphis through the construction of levees upon the Arkansas side, which are designed partly to promote navigation and partly to protect large cultivable areas. The city of Memphis is situated on the bluff side, and the Arkansas side is the swamp side of the river. The result of the contraction of the river by those levees has been to force the flood of the river against the bluff side at Memphis in such a way as to seriously injure the public works there and to seriously imperil the health of the people. The work that has been inaugurated, recollect, is the work of narrowing the river, and this amendment is simply intended to carry out the existing work in such a way as to make it innocuous to the city and to its inhabitants.

It seems to me that the amendment is entirely in order, it being to provide for a part of an existing work; and it seems to me that it would be a very wise exercise of the judgment of Congress in providing now for the cooperation of the Mississippi River Commission with the municipal authorities of Memphis, through teamwork that will result in continuing the operation of narrowing the river without injury to the adjoining country.

Mr. LEA. Mr. President, as this point of order is different from the point of order which was ruled on by the Chair the other day, I ask that it be submitted to the Senate.

The PRESIDENT pro tempore. The rule is very explicit in this matter. First, as the Chair understands, the proposed appropriation has not been estimated for, and, next, the rule states that amendments proposing new items of appropriation to a river and harbor bill shall, before being considered, be referred to the Committee on Commerce, which in this instance has not been done. Therefore the Chair reluctantly sustains the point of order.

Mr. CLARKE of Arkansas. I very reluctantly made the point of order.

Mr. NEWLANDS. Mr. President, I offer the amendment which I send to the desk, and ask that it be read.

The PRESIDENT pro tempore. The Senator from Nevada offers an amendment, which will be read.

The Secretary proceeded to read the amendment, which was, on page 65, after line 10, to insert a new section.

Mr. SIMMONS. Mr. President, I desire to ask the Senator from Nevada, as we are a little pressed for time, if he would consent to dispense with the reading and explain in a few words his amendment? I think the amendment can probably be better understood by Senators by an explanation than by a reading of it.

Mr. NEWLANDS. Mr. President, pursuant to the suggestion of the Senator from North Carolina, I ask that the amendment which I have offered be inserted in the Record without reading.

The PRESIDENT pro tempore. Is there objection to the request that the further reading of the amendment be dispensed with, and that it be inserted in full in the Record? The Chair hears none, and it will be so ordered.

The proposed amendment is to insert as a new section the following:

SEC. 3. That for the regulation and control of the flow of navigable rivers in aid of interstate commerce, and as a means to that end for the storage of flood waters in the watershed of such navigable rivers, including the beneficial use and control of such flood waters, in the maintenance so far as practicable of a standard flow for navigation, the reclamation of arid and swamp lands, and the development of water power; and for the protection of watersheds from denudation, erosion, and from forest fires, and for the cooperation of Government services and bureaus with each other and with States, municipalities, and other local agencies in plans and works having in view such river regulation and control, the sum of $5,000,000 annually for each of the years following the 1st day of July, 1913, and up to the date of the completion and opening to commerce of the Panama Canal, and thereafter the sum of $50,000,000 annually for each of the 10 years following the completion of the Panama Canal, is hereby reserved, set aside, and appropriated and made available until expended, out of any moneys not otherwise appropriated, as a special fund in the Treasury to be known as the river-regulation fund.

That of the said river-regulation fund, until otherwise directed by law, one-tenth thereof shall be apportioned to the rivers on the Atlantic coast, one-tenth thereof to the rivers on the Gulf coast outside of the Mississippi River, one-fifth thereof to the Mississippi River from St. Louis to the Gulf; one-tenth thereof to the Missouri River and its tributaries, one-tenth thereof to the Ohio River and its tributaries, one-tenth thereof to the upper Mississippi River above St. Louis and its tributaries, one-tenth thereof to the Sacramento and San Joaquin Rivers and their tributaries in California, one-tenth thereof to the Columbia and Snake Rivers and their tributaries in Oregon, Washington, and Idaho, and one-tenth thereof in the connection of the Great Lakes with the Ohio and Mississippi Rivers.

That a board is hereby created, to be known as the Board of River Regulation, consisting of the Chief of Engineers of the United States Army, the chairman of the Panama Commission, the chairman of the Board of Review of the Engineer Corps of the Army, the chairman of the Mississippi River Commission, the Director of the United States Geological Survey, the Chief of the Weather Bureau, the Forester of the Department of Agriculture, the Director of the Reclamation Service, the Chief of the Drainage Division of the Department of Agriculture, the Secretary of the Smithsonian Institution, one hydraulic engineer, one sanitary engineer, and one electrical engineer, the last three to be appointed by the President and to hold office at his pleasure, and each to receive an annual compensation of $7,500, payable out of the river-regulation fund.

The Chief of Engineers shall be the chairman of such board, and the secretary shall be annually elected by the board from its members.

That the functions of said board shall be to investigate and obtain full information concerning all matters involved in or specifically related to the objects set forth in this section, and for such purpose is authorized to expend a suitable and necessary proportion of the moneys therein appropriated; but said board shall not expend or incur liability for the expenditure of any money for the construction or execution of plans or projects without the specific approval of Congress, as hereinafter set forth; that said board is hereby authorized and directed to enlist through the President the services of any Federal department or bureau the statutory authority of which may involve investigations or constructive work that is necessary or desirable in the comprehensive performance of the objects set forth in this section, and to bring into cooperation and to harmonize and unify the work of said departments or bureaus as may be necessary to provide against duplication or unwarranted or incomplete work with respect to the objects herein provided; and that said board is authorized to defray the expenses of such investigations or assistance to the extent of the ultimate cost thereof to said departments or bureaus through a transfer of equivalent proportions of the appropriation herein provided.

That the board shall develop, formulate, and prepare plans for the accomplishment of the purposes herein provided, and shall report the same to Congress annually and at such other times as may be required; and whenever the recommendations or any parts thereof in said report shall receive the approval of Congress the said board shall proceed to construct and execute the same in accordance with the plans so approved: *Provided*, That the provisions of this section shall be so administered as in no way to supersede or conflict with any specific provisions which Congress shall from time to time make by way of appropriations other than such as are made by this act for work and improvements to be performed or maintained by the Corps of Engineers, United States Army, but that all work prescribed under this section shall be supplemental to and coordinated with the work as specifically prescribed by Congress in other acts.

That the board shall in all cases where possible and practicable encourage, promote, and endeavor to secure the cooperation of State and local government bodies, public and quasi public corporations, private associations, and persons in carrying out the purposes and objects of this act, including the securing of the financial cooperation of said parties; that it shall negotiate and arrange plans for the apportionment of work, costs, and benefits, and to secure the agreement and consent of said parties, contingent upon the final approval of same by Congress as herein provided, which approval and consent may include the acceptance and use of any funds or property donated or subscribed or in any way provided for cooperative work; but no moneys shall be expended under any arrangement for cooperation approved by Congress until the funds to be provided by the parties to such arrangement shall have been made available for disbursement.

Mr. NEWLANDS. Mr. President, the amendment which I have offered is a condensation of a bill which I have presented in different phases during the last six or seven years for the regulation of rivers by the creation of a board of river regulation, which shall bring into coordination the various scientific services of the Government whose duties in any way relate to the conservation or the use of water, such as the Reclamation Service, the Forestry Service, the Geological Survey, the Engineer Corps of the Army, the drainage service, and other scientific services of that kind. It provides for a river regulation fund, to which is appropriated until the completion of the Panama Canal only $5,000,000 annually, and after that time the sum of $50,000,000 annually for a period of 10 years, thus providing a sum of a little over $500,000,000, which will be expended in the regulation of our rivers during the next 10 or 12 years and which will insure continuous work upon all the watersheds of the country, that work embracing not only the cooperation of the services that relate to water, but the cooperation of the Nation with the States, so that the plans can be mutually prepared by the river regulation board and organizations effected by the States in such a way that the works contemplated by the respective sovereignties will dovetail into each other without conflict of jurisdiction and without the intrusion of any sovereign upon the jurisdiction of the other. It will insure team work that will secure the complete regulation of rivers, not only for the purposes of navigation, but for the purpose of storage for irrigation, storage for water-power development, control for swamp-land regulation, and all other uses to which the waters of rivers can be put, the idea being that every river is to be regarded as a unit composed of the main river, its lateral tributaries and source streams, and that the river should be developed by the exercise of all the powers and functions of the sovereigns and parties interested in the river in such a way as to secure its highest and best use for every purpose, the works to be constructed in such a way as to apportion the costs and the benefits to the relative jurisdictions.

The history of this proposed policy is as follows: In 1907 President Roosevelt appointed an Inland Waterways Commission, composed of two Senators, two Representatives, and five chiefs of the various services of the Government interested in water development—the Chief of Engineers of the Army, the Chief of the Forestry Service, the Chief of the Reclamation Service, the Chief of the Bureau of Corporations, and a representative of the Bureau of Soils. The duty assigned to that board by the executive department was to make an investigation as to the best method of regulating our rivers in such a way as to secure their highest use. That commission traveled all over the country. They made a report, in which they recommended practically everything contained in this amendment, with the exception that there was a difference of opinion as to whether a large fund should be created or whether the reports of the river board should come to Congress and appropriations be made based upon their reports, as now is the custom with reference to the river and harbor bill. To that report, in which I concurred as a member, I added an addendum, which is brief and the wisdom of which I think has been demonstrated by subsequent history. My statement was as follows:

> I concur in the report of the commission, but desire to emphasize my belief that it is of the highest importance that in dealing with subjects relating to the respective powers, rights, and interests of the Nation, States, municipalities, corporations, and individuals, large powers and a comparatively free hand should be given to an administrative body of experts in the full development of projects, lest the complexity of the transactions, the time necessary to secure congressional approval, and difference of view as to purpose or method may result in indecision and delay, the worst enemies of effective development.
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> An ample fund should be provided, to be reenforced from time to time either by legislative appropriation or by bond issue, and the administsative board or commission should be given the power not only to investigate projects, but also, when determined to be feasible, to enter, with the approval of the President, upon their immediate execution; but the power should be limited so as to prevent such administrative body from entering into any contract unless there are sufficient unappropriated moneys in the fund to meet the cost thereof.
>
> Unless some method of construction and development insuring prompt decision and execution and continuous and consecutive work by a body of experts is adopted, I fear that the best of projects may be wrecked in the shoals and quicksands of legislation.

Mr. President, prior to the report of the Inland Waterways Commission, I had introduced a bill covering this subject. That bill went to the Committee on Commerce, and was referred by the committee to the Inland Waterways Commission and to the Secretary of War for their opinion as to its merits. I wish to quote briefly from the report of the Inland Waterways Commission:

> 1. Several of the leading provisions of the bill are in accord with the recommendations of the commission in a report submitted on February 3 last and transmitted to the Congress by the President on February 26. Among these are (a) the provision for coordination of navigation with related uses of the waters; (b) the provision for cooperation between the Federal Government, States, municipalities, communities, corporations, and individuals; (c) the provision for correlating existing agencies in the Departments of War, Interior, Agriculture, and Commerce and Labor in such manner as to secure effective administration; and (d) the provisions looking toward the control of running waters in such manner as to protect and promote navigation. In so far as these provisions are concerned, the bill has the unqualified approbation of the commission.
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> 3. The general purpose of the bill is in harmony with the comprehensive plan for improving and developing the waterways of the country framed by the commission and approved by the President in his message of February 26 last.

The Secretary of War, Mr. Taft, also made a report upon this bill, quotations from which I shall ask to have inserted in the Record. In that report the Secretary of War approved the bill. I shall not delay the Senate in the consideration of this bill by quoting freely from the report, but shall content myself with placing the extracts in the Record. I will simply say that he most emphatically indorsed the principle of coordinating the various Federal agencies and scientific bureaus in this work, and that he approved the method provided by the bill for bringing the Nation and the States into cooperation.

Shortly after that a conference of the governors was held at the White House, May 13, 1908. I shall ask to insert in the Record a statement from their resolutions, in which they unanimously indorsed the principle of cooperation in this work between the scientific services of the Government, cooperation of the Nation with the States, and the study and development of all our rivers in such a way as to promote every civilized use.

The PRESIDENT pro tempore. Without objection, leave will be granted as requested by the Senator.

(The matter referred to is as follows:)

[Extracts from the letter of Secretary of War William H. Taft to the Senate Committee on Commerce, dated Apr. 17, 1908, on the same subject.]

(c) The bill provides for correlating the existing agencies in the Departments of War, Interior, Agriculture, and Commerce and Labor through certain powers vested in the President. The need for some such plan is sufficiently shown by the fact that while this country is better endowed with waterways than any other, our streams are less used for navigation and other public purposes than those of other countries. Since this provision touches duties placed on the War Department by law, it has received careful consideration. It does not appear that the measure would interfere with the functions of the War Department, or with the continuation and extension of the engineering work now performed there, but it is believed that the provision for administration would tend to promote the general welfaare. Accordingly, this feature meets the approbation of the War Department.

* * * * * * *

(e) The bill provides also for the initiation of projects by a board of experts. These provisions affect the work of the War Department and have had careful consideration. Suitable provisions for expert initiation and prompt execution are essential to the proper development of any system of river improvement. The chief defect in the methods hitherto pursued lies in the absence of executive authority for originating comprehensive plans covering the country or natural divisions thereof. The creation of an inland waterways commission for the purpose of initiating plans for the improvement of waterways seems to me a more effective way of a general plan for the improvement of all the waterways in the country than under the present provisions of law. This would not dispense with the admirable machinery furnished by the War Department for the improvement of waterways when the plan has been determined upon and is to be executed. But it supplies what does not exist in the law now—a tribunal other than Congress charged with the duty of originating and developing a satisfactory plan.

Secretary Taft adds:

3. In its present form the bill might be construed to curtail indirectly certain functions of the War Department, which is now charged with large discretion in waterway affairs. Possible ambiguty on this point should be removed.

Mr. Taft goes on and gives the history of the Engineer Corps of the Army and shows how it drifted into the control of our waterways:

Under the same long-standing arrangement—

Mr. Taft says—

It is the policy of the War Department to maintain a trained body of military engineers with a view to the national defense, and to keep these engineers in training in time of peace by detail to civil duty allied to their professional duty in time of war or military preparation; and it was in carrying out this policy that the functions of the War Department pertaining to waterways have been more and more largely intrusted to the engineers of the Army during the 110 years since the Army and Navy were separated in distinct departments. This policy has long been sustained by the Congress, although the military engineers have been prohibited from initiating projects or originating plans for meeting the growing needs of commerce. It is desirable to continue the policy of keeping the military engineers in training and at the same time rendering their skilled service available in work on waterways, although it is not necessary to vest them with the power of initiative, which they have not exercised in the past and which is, perhaps, inconsistent with their primary duty in connection with the Military Establishment, of which they form a part. A provision that the Chief of Engineers of the Army shall be a member of the commission proposed to be created, and a further provision specifically covering the detail of military engineers to the service of the commission whenever such detail shall be consistent with their military duties, would remove any possible ambiguity and would be in accord with the custom and policy of the War Department.

[Extracts from the conference of governors, held at the White House, May 13–15, 1908.]

We declare our firm conviction that this conservation of our natural resources is a subject of transcendent importance, which should engage unremittingly the attention of the Nation, the States, and the people in earnest cooperation. These natural resources include the land on which we live and which yields our food; the living waters which fertilize the soil, supply power, and form great avenues of commerce; the forests which yield the materials for our homes, prevent erosion of the soil, and conserve the navigation and other uses of the streams; and the minerals which form the basis of our industrial life, and supply us with heat, light, and power.

We agree that the land should be so used that erosion and soil wash shall cease; and that there should be reclamation of arid and semiarid regions by means of irrigation, and of swamp and overflowed regions by means of drainage; that the waters should be so conserved and used as to promote navigation, to enable the arid regions to be reclaimed by irrigation, and to develop power in the interests of the people; that the forests which regulate our rivers, support our industries, and promote the fertility and productiveness of the soil should be preserved and perpetuated; that the minerals found so abundantly beneath the surface should be so used as to prolong their utility; that the beauty, healthfulness, and habitability of our country should be preserved and increased; that the sources of national wealth exist for the benefit of the people, and that monopoly thereof should not be tolerated.

We commend the wise forethought of the President in sounding the note of warning as to the waste and exhaustion of the natural resourses of the country, and signify our high appreciation of his action in calling this conference to consider the same and to seek remedies therefor through cooperation of the Nation and the States.

We agree that this cooperation should find expression in suitable action by the Congress within the limits of and coextensive with the national jurisdiction of the subject, and complementary thereto, by the legislatures of the several States within the limits of and coextensive with their jurisdiction.

We declare the conviction that in the use of the national resources our independent States are interdependent and bound together by ties of mutual benefits, responsibilities, and duties.

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We recognize in our waters a most valuable asset of the people of the United States, and we recommend the enactment of laws looking to the conservation of water resources for irrigation, water supply, power, and navigation, to the end that navigable and source streams may be brought under complete control and fully utilized for every purpose. We especially urge on the Federal Congress the immediate adoption of a wise, active, and thorough waterway policy, providing for the prompt improvement of our streams and the conservation of their watersheds required for the uses of commerce and the protection of the interests of our people.

Later on the political parties, in 1908, took action upon this subject. With the permission of the Senate I will insert in the Record quotations from the platforms of 1908 and 1912, from which it will be seen that all of these parties recognized and indorsed the policy embraced in the river-regulation bill which I have offered and in this amendment, which is a condensation of that bill.

The PRESIDENT pro tempore. Without objection, leave will be granted.

(The matter referred to is as follows:)

[DECLARATIONS OF THE PLATFORMS OF THE DEMOCRATIC AND REPUBLICAN PARTIES IN 1908 RELATIVE TO THE IMPROVEMENT OF THE WATERWAYS.]

DEMOCRATIC PLATFORM 1908—WATERWAYS.

Water furnishes the cheaper means of transportations, and the National Government, having the control of navigable waters, should improve them to their fullest capacity. We earnestly favor the immediate adoption of a liberal and comprehensive plan for improving every watercourse in the Union which is justified by the needs of commerce; and to secure that end we favor, when practicable, the connection of the Great Lakes with the navigable rivers and with the Gulf through the Mississippi River and the navigable rivers with each other by artificial canals with a view of perfecting a system of inland waterways to be navigated by vessels of standard draft.

We favor the coordination of the various services of the Government connected with waterways in one service for the purpose of aiding in the completion of such a system of inland waterways; and we favor the creation of a fund ample for continuous work, which shall be conducted under the direction of a commission of experts to be authorized by law.

REPUBLICAN PLATFORM 1908—CONSERVATION.

We indorse the movement inaugurated by the administration for the conservation of the natural resources. * * * In the line of this splendid undertaking is the future day, equally imperative, to enter upon a systematic improvement upon a large and comprehensive plan, just to all persons of the country, of the waterways, harbors, and Great Lakes, whose natural adaptability to the increasing traffic of the land is one of the greatest gifts of a benign Providence.

Natural resources.—We repeat the demand for internal development and for the conservation of our natural resources contained in previous platforms, the enforcement of which Mr. Roosevelt has vainly sought from a reluctant party; and to that end we insist upon the preservation, protection, and replacement of needed forests, the preservation of the public domain of home seekers, the protection of the national resources in timber, coal, iron, and oil against monopolistic control, the development of our waterways for navigation and every other useful purpose, including the irrigation of arid lands, the reclamation of swamp lands, the clarification of streams, the development of water power, and the preservation of electric power generated by this natural force, from the control of monopoly; and to such end we urge the exercise of all powers, National, State, and municipal, both separately and in cooperation.

[DECLARATIONS OF THE PLATFORMS OF THE DEMOCRATIC, REPUBLICAN, AND PROGRESSIVE PARTIES IN 1912 RELATIVE TO THE IMPROVEMENT OF THE WATERWAYS.]

DEMOCRATIC PLATFORM.

We renew the declaration of our last platform relating to the conservation of our national resources and the development of our waterways. The present devastation of the lower Mississippi Valley accentuates the movement for the regulation of river flow by additional levee and bank protection below and the diversion, storage, and control of the flood waters above and their utilization for beneficial purposes in the reclamation of arid and swamp lands and the development of water power instead of permitting the floods to continue, as heretofore, agents of destruction. We hold that the control of the Mississippi River is a national problem. The preservation of the depths of its water for the purpose of navigation, the building of levees to maintain the integrity of its channel and the prevention of the overflow of the land, and its consequent devastation, resulting in the interruption of interstate commerce, the disorganization of the mail service, and the enormous loss of life and property impose an obligation which alone can be discharged by the General Government.

To maintain an adequate depth of water the entire year and thereby encourage water transportation is a consummation worthy of legislative attention and presents an issue national in its character. It calls for prompt action on the part of Congress, and the Democratic Party pledges itself to the enactment of legislation leading to that end.

We favor the cooperation of the United States and the respective States in plans for the comprehensive treatment of all waterways with a view of coordinating plans for channel improvement with plans for drainage of swamp and overflowed lands, and to this end we favor the appropriation by the Federal Government of sufficient funds to make surveys of such lands, to develop plans for draining the same, and to supervise the work of construction.

We favor the adoption of a liberal and comprehensive plan for the development and improvement of our inland waterways with economy and efficiency, so as to permit their navigation by vessels of standard draft.

REPUBLICAN PLATFORM.

The Mississippi River is the Nation's drainage ditch. Its flood waters, gathered from 31 States and the Dominion of Canada, constitute an overpowering force which breaks the levees and pours its torrents over many million acres of the richest land in the Union, stopping mails, impeding commerce, and causing great loss of life and property. These floods are national in scope, and the disasters they produce seriously affect the general welfare. The States unaided can not cope with this giant problem; hence we believe the Federal Government should assume a fair proportion of the burden of its control, so as to prevent the disasters from recurring floods.

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We favor a liberal and systematic policy for the improvement of our rivers and harbors. Such improvement has been made upon expert information and after a careful comparison of cost and prospective benefits.

PROGRESSIVE PARTY PLATFORM.

The rivers of the United States are the natural arteries of this continent. We demand that they shall be opened to traffic as indispensable parts of a great nation-wide system of transportation in which the Panama Canal will be the central link, thus enabling the whole interior of the United States to share with the Atlantic and Pacific seaboards in the benefit derived from the canals. It is a national obligation to develop our rivers, and especially the Mississippi and its tributaries, without delay, under a comprehensive general plan covering each river system from its source to its mouth, designed to secure its highest usefulness for navigation, irrigation, domestic supply, water power, and the prevention of floods. We pledge our party to the immediate preparation of such a plan, which should be made and carried out in close and friendly cooperation between the Nation, the States, and the cities affected. Under such a plan the destructive floods of the Mississippi and other streams which represent a vast and needless loss to the Nation would be controlled by forest conservation and water storage at the headwaters and by levees below, land sufficient to support millions of people will be reclaimed from the deserts and the swamps, water power enough to transform the industrial standings of whole States would be developed, adequate water terminals would be provided, transportation by river would revive, and the railroads would be compelled to cooperate as freely with the boat lines as with each other. The equipment, organization, and experience acquired in constructing the Panama Canal soon will be available for the Lake-to-the-Gulf deep waterways and other portions of this great work, and should be utilized by the Nation in cooperation with the various States at the lowest net cost to the people.

Mr. NEWLANDS. I shall not weary the Senate with the reading of these various platforms. It is sufficient to say that in 1908 the Republican Party indorsed this policy in general terms, and the Democratic Party indorsed it in express terms, specifically demanding what the pending amendment provides, namely, coordination of the services, cooperation with the States, an ample fund for continuous work, the dovetailing of plans so as to insure the construction and completion of works that would serve all the uses to which a river can be put, whether those uses are under national or under State jurisdiction, but providing for this teamwork and cooperative work in such a way as to preserve the integrity of the jurisdiction of each sovereign. The Democratic platform of 1912 indorsed and repeated its insistence upon the declaration of 1908, and added to it a declaration that the recent flood on the Mississippi River accentuated the demand for the development of this policy. The new party, the Progressive Party, added its demands to those of the Republican and Democratic Parties in favor of broad and comprehensive plans, ample funds, continuous work, and teamwork between the Nation and the States.

Mr. President, my impression is that at different sessions of Congress I have introduced three bills upon this subject, each of which I regard as an improvement upon the other. The first bill, which I introduced in 1907, was a bill entitled, if I recollect rightly, "A bill for the creation of an inland waterway commission." The pending bill provides for the creation of a river regulation board. It contains everything that is contained in the other bill and contains elaborations which I think will add to its efficiency.

The first bill, it will be recalled, was referred to the Secretary of War, Mr. Taft, and received his approval. The last bill was referred to the Secretary of Agriculture, the Secretary of the Interior, the War Department, and the Secretary of the Smithsonian Institution, the latter being for many years, as will be remembered, the Director of the Geological Survey—an experienced official and most capable administrator—who has been familiar with every phase of waterway development in this country for many years. I will ask that the communication from the Secretary of Agriculture may be read. It is addressed to the Committee on Commerce.

The PRESIDENT pro tempore. Without objection, the letter will be read, as requested.

(The Secretary read as follows:)

DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
Washington, April 4, 1912.

HON. KNUTE NELSON,
Chairman Committee on Commerce, United States Senate.

MY DEAR SENATOR: I have received, by reference, from the clerk to your committee, Senate bill 122, introduced by Mr. Newlands, "to create a board of river regulation," etc. It is a comprehensive measure with regard to the control and utilization of flood waters. I have referred the bill for comment to three of the chiefs of bureaus in this department and inclose herewith copies of their reports, in which they discuss the matter, I think, very intelligently.

I have been for some time impressed with the fact that sooner or later the Congress of the United States, probably in cooperation with the States, will be compelled to inquire carefully into the waters of the country that are now going to waste, with a view to their utilization in the production of maximum crops. Where we depend entirely upon rainfall, we do not always get maximum crops, because there are long periods of drought that prevent. We had such drought last year. I believe it will be necessary eventually for the Federal Government, or the Federal Government and the States, or in some cases each State individually, to work out a comprehensive system of saving flood waters—the surplus waters that run away in spring and winter and during flood times in summer. This can be done, as it has been done in other countries, by arranging for a system of reservoirs beginning near the head of streams and continuing the reservoirs down the streams until all the advantage is secured that can be had from confining the waters for use on the land in dry times. I think the entry upon the subject is timely and wise, and any cooperation this department can extend will be cheerfully given.

There is a line of work in this connection that must be done by the Weather Bureau in ascertaining the precipitation found on each of the streams, and this feature I think it would be well for the committee to look into, if it has not already been considered.

Very truly, yours,

JAMES WILSON, *Secretary.*

Mr. NEWLANDS. Mr. President, as the time is short, I shall not have the other reports read, but shall ask that they be inserted in the Record.

The PRESIDENT pro tempore. Without objection, that order will be made.

(The matter referred to is as follows:)

THE SECRETARY OF THE INTERIOR,
Washington, January 29, 1913.

The COMMITTEE ON COMMERCE,
United States Senate.

GENTLEMEN: I am in receipt of your request for such suggestions as I may deem proper touching the merits of Senate bill 122, "To create a board of river regulation and to provide a fund for the regulation and control of the flow of navigable rivers in aid of interstate commerce, and as a means to that end to provide for flood prevention and protection and for the beneficial use of flood waters and for water storage and for the protection of watersheds from denudation and erosion and from forest fires, and for the cooperation of Government services and bureaus with each other and with States, municipalities, and other local agencies."

This bill is based upon two principles which have not been hitherto generally recognized in the construction of public works for river improvement. These principles are, first, that a river from its source to mouth, with all of its tributaries, is a unit in all its most important physical and functonal craracteristics. It should therefore be dealt with as a whole and not piecemeal, and in dealing with it for any single use, such as navigation, we should not lose sight of the other uses to which it can be put, such as water supply, irrigation, power, drainage, etc. River improvement should harmonize these uses, treating the river system as a unit for this purpose, and should provide for the cooperation of the Nation, States, and individuals to that end. The same principle applies, only in less degree, to the unification of all river systems into one comprehensive whole.

The second principle is that this work of waterway improvement in its details should be guided and determined as an administrative and not as a legislative matter, and therefore that a large fund should be provided and replenished from time to time as may be necessary, this fund to be expended at the discretion of a competent administrative commission of experts without specific appropriations or limitations, except of a broad general character, by Congress. The proposed commission is to consist of the chiefs of the Federal bureaus whose duties are now concerned with specific phases of the problem, together with specially qualified experts to be appointed by the President.

I am heartily in accord with these principles and believe that legislation embodying them should be enacted. I have not attempted, however, to criticize the bill in detail.

Very respectfully,

WALTER L. FISHER, *Secretary.*

WAR DEPARTMENT,
Washington, January 27, 1913.

MY DEAR SENATOR NEWLANDS: I have at last had an opportunity to read and consider the bill introduced by you in the first session of the present Congress (S. 122) to create a board of river regulation and to provide a fund for the regulation and control of the flow of navigable rivers, etc. The bill relates to many bureaus and departments of the Government not within my jurisdiction, and it contains many administrative features, which will doubtless be the occasion of much discussion and probable difference of opinion. As to the details of these features, I can not, especially in the limited time which I have, express any opinion. But so far as my observation extends, the bill is the first attempt to treat in a comprehensive and constructive manner the national problem afforded by our rivers and waterways. It is only of late years that we are beginning to obtain an adequate idea of the extent of this problem. It is only of late that the effect of forestation upon stream flow and erosion has been studied and appreciated, and that it has been learned how the navigable character of our long rivers may in part depend upon conditions at their headwaters. It is only of late years that the science of engineering has suggested conserving and standardizing the flow of our navigable rivers by systems of reservoirs at their heads. It is only within comparatively recent years that our engineers have developed the method of making navigable our long and shallow streams by canalization or the slack-water method. And it is even later yet that our people have begun to realize the necessity of saving and utilizing in this development, for the purpose of reducing its expenses, the valuable incidental water powers which may be created in the development itself.

Our conception, therefore, of what constitutes a navigable river and our appreciation of the various elements which enter into its development have been greatly widening. We see now that the problem of developing and preserving its navigability is no longer necessarily confined to removing obstructions in that part of the river in which navigation exists, but may extend to countless remote branches and sources of supply. We also see how the improvement of the river may be intimately connected with and dependent upon another development—that of water power—which formerly we may have regarded as a thing quite separate and apart.

This growth of knowledge in respect to the problem necessarily postulates a similar broadening in our treatment of it. To the Federal Government has been confided the care of our navigable streams. The Federal Government is also the proprietor of vast tracts of public and forest land, upon the protection of which the stream flow ultimately depends. It is also the proprietor of other semiarid lands, whose future use depends upon irrigation taken from navigable waters or their sources of supply. One of its departments has also direct relations with the development of our farming lands and the preservation of our forests. All of these activities of the Government impinge upon each other, and they also at the same time impinge at many points upon the jurisdiction, the property, and the powers of the several States.

Under these circumstances it is manifest that the problem of our navigable rivers can no longer be treated as a mere problem of dredging and deepening, of removing snags and obstructions, of confining our work to those stretches of river where commerce is actually plying, but must extend to those vital sources of supply upon which the very existence of the river depends. And it is equally manifest that in exercising this widening responsibility the Government must avail itself of all proper and possible means to economize the inevitable expense. If the general taxpayers of the country are to be called upon, for example, to protect the dwellers along the lower Mississippi Valley against the floods of that river, by taking over the expense of caring for its levee system, they must be permitted to reduce this enormous burden by availing themselves of all the by-products of water power which can be developed in the improvement not only of that river, but of all our other navigable streams.

Under our present system there is no such coordination of effort. Government action which may affect a single river is distributed among different bureaus and different departments, which have at present no necessity and practically no opportunity even for common discussion. This leads not only to lack of cooperation and action, but it often perpetuates conflicting scientific theories under circumstances where the conflict might be removed by mutual discussion and comparison of work. Instances have come under my personal observation, for example, where the views held by members of the Corps of Engineers as to the effect of forestration upon stream flow were radically different from those held by the Geological Survey and by the Forest Service.

It is manifest that such conditions work against effectiveness and in the direction of waste and expense. Such lack of cooperation would not be permitted in any private organization possessing the functions of our Federal Government. The various agents intrusted with responsibility over the various parts of the problem would be brought into mutual relations where they would be obliged to discuss and coordinate the mutually interdependent features, and a system would be arranged by which a consistent view of the whole problem could be obtained and by which it could be attacked intelligently in all its parts.

I understand that this is the purpose of your bill, and such a purpose must appeal to anyone who has considered the problem. As I said in the beginning, I can not undertake to discuss the administrative methods by which you undertake to solve the problem. I may say, however, that my own inclination would be to lay primary emphasis upon the creation of a board whose duty it would be to discuss and harmonize and recommend rather than to actually appropriate funds. The latter function may meet objection, which would not exist in the case of the former. And it seems to me that the former functions are the most pressing and important in our present situation.

I may also observe that my experience indicates that our executive and bureau officers are already weighed down with about as much labor and as many functions as can be wisely performed. There is not a little danger of loading down our administrative machinery to inefficiency. In conferring such extensive powers as your bill contemplates upon a board largely composed of existing officials, we should be on our guard lest we impair the existing enforcement of the law by entrusting it entirely to men who are already overworked. Such details, however, are doubtless under observation by yourself, and the suggested criticism, if held well founded, could be met by amendment.

Very respectfully,

Henry L. Stimson, *Secretary of War.*

Hon. Francis G. Newlands,
United States Senate.

[United States National Museum; International Exchanges; Bureau of American Ethnology; National Zoological Park; Astrophysical Observatory; International Catalogue of Scientific Literature.]

Smithsonian Institution,
Washington, U. S. A., February 7, 1912.

To Hon. Knute Nelson,
Chairman Committee on Commerce,
United States Senate, Washington, D. C.

Sir: In reply to your request of January 5, 1912, that the Committee on Commerce be furnished with suggestions touching upon the merits of Senate bill No. 122 and the propriety of its passage, I beg to state that the bill has been duly examined.

GENERAL FEATURES OF BILL.

I am in full accord with the general features of the bill and think that if they are carried into effect it would be of great advantage and value not only to the citizens of the United States but as an example to the various civilized nations of the world. The comprehensive scheme outlined calls for a coordination of many effective forces now at the service of the Government that can not fail to give practical results of a constructive nature and great value and to stimulate the action of individual States and municipalities.

The problems involved are of such a character and concern such vast interests that it is only by taking them up in the broadest possible manner that successful and permanent results can be obtained. This will involve the expenditure of a large amount of money, energy, and time, but with wise planning and effective administration the results can not fail to be of the greatest value and service as long as the civilized people exist on the North American Continent.

The administration and execution of a work of such magnitude might properly hereafter involve a redistribution of some of the bureaus concerned so as to bring a majority of them into one of the existing departments that might become equivalent to a department of public works and conservation.

WORK OF THE SMITHSONIAN INSTITUTION.

The bill provides in section 11:

"That it shall be the duty of the Secretary of the Smithsonian Institution to give especially attention to the acquisition from foreign countries and from all sources of all obtainable knowledge concerning the problems involved in the work of the board and to diffuse and disseminate the same and to establish and maintain a museum of conservation, in which such knowledge shall be placed before the people, with object lessons illustrating the disastrous consequences that have resulted from the failure of such conservation and particularly the failure to conserve the forest and water resources in other countries of the world, and to utilize the resources of the institution under his charge, which may be available for that purpose, to aid in the education of the public in the elements of knowledge which lead to the successful regulation of water and of the flow of rivers and the use of water in connection with agriculture and the intensive cultivation of land and in connection with other industries."

It is my belief that a museum of coservation such as is contemplated in this bill can be satisfactorily established and maintained in connection with the National Museum system if adequate means are supplied for the purpose. Such a museum, which would consist largely of models, charts, maps, diagrams, and photographs, would ultimately require a considerable amount of space for its installation. In the beginning provision might be made for its accommodation in the buildings now under the control of the institution, but additional room would be called for in the near future if its rate of growth were commensurate with the scope and importance of the subject.

The preparation of the models and other exhibits, which must be accurate in detail, would require time and necessitate the employment of skilled modelers and other workmen. In the beginning it would be necessary to secure measurements, charts, photographs, etc., of typical areas in various parts of the world showing the methods and effects of conservation and reclamation and of others showing the results of neglect of such activities; also of the forms of engineering works best adapted to the purposes of conservation and of other objects and scenes illustrating the subject under consideration. In this manner an adequate basis could be obtained for accurate educational models suitable for the museum.

As regards the acquisition and dissemination of knowledge relative to the conservation of natural resources and allied topics, the Smithsonian Institution could doubtless accomplish much of what is desired through an extension of its exchange service and its system of correspondence. It would, however, in my judgment, be necessary in this connection also to send experts and agents to obtain information at first hand. It is taken for granted that much new informamtion would be desired regarding conservation operations, etc., which could only be obtained by studies made in the places in which these operations are carried on. It would be important also in connection with the subject of forestry, mentioned in this bill, to have studies made of forests which are still in an undisturbed natural condition, especially the forests of Central and South America, which are extensive and diversified and have been but little affected by human activities. The natural relations existing between forests, water supply, and soils could be studied there to better advantage perhaps than in any other part of the world.

I would call your attention to a certain inconsistency in the bill as regards the dissemination of information procured under the direction of the board. In section 11 it is made the duty of the Smithsonian Institution to disseminate this knowledge, and in section 6 the board is directed to "print, publish, and disseminate" the "information, data, and facts collected and obtained by the various bureaus or offices of the Government."

Having had a somewhat varied experience in connection with the administration of the Geological Survey, which included hydrographic work and the Reclamation Service, the early development of the Forest Service and policy, and the past five years as Secretary of the Smithsonian Institution, I am submitting as appendices some general statements combining my own and experts' views on the following different points:

1. Conservation of water resources.
2. Conservation of water resources in respect to irrigation.
3. Conservation of forest resources.

Very respectfully, yours,

CHARLES D. WALCOTT, *Secretary.*

Mr. NEWLANDS. I will read a sentence or two from each of them to indicate how thoroughly they approve the principle of this bill.

Secretary Fisher says:

This bill is based upon two principles which have not been hitherto generally recognized in the construction of public works for river improvement. These principles are: First, that a river from its source to its mouth, with all of its tributaries, is a unit in all its most important physical and functional characteristics. It should, therefore, be dealt with as a whole and not piecemeal, and in dealing with it for any single use, such as navigation, we should not lose sight of the other uses to which it can be put, such as water supply, irrigation, power, drainage, etc.

He then declares the second principle to be that this work of waterway improvements, in its details, should be guided and determined as an administrative and not a legislative matter, and therefore that a large fund should be provided, etc.

The Secretary of War, Mr. Stimson, by mistake addressed his letter to me personally instead of to the charman of the Committee on Commerce; but it is a report upon the pending bill. It is a report prepared with great care, and contains a most valuable vindication of the policy to which I have referred. He emphatically approves the system proposed, of coordination of bureaus and services, cooperation with States, an ample fund, continuous work, and the contemporaneous development of every use to which a river can be put by the exercise of the joint powers and functions of the Nation and the States.

The letter from the Secretary of the Smithsonian Institution, Mr. Walcott, formerly the Director of the Geological Survey, also indorses every essential principle of this bill, as a result of the long experience of that gentleman in the scientific work of the Geological Survey, which first undertook a general study of the waters of the United States, and under whose jurisdiction the Reclamation Service was developed most efficiently.

Mr. President, I have here also numerous resolutions and comments of a public character upon this bill, which I should like to have inserted in the Record without reading. They include the indorsement of this bill by the Legislatures of California, Louisiana, and South Dakota, the indorsements of numerous waterway associations, chambers of commerce, and boards of trade.

The PRESIDENT pro tempore. Without objection, that order will be made.

(The matter referred to is as follows:)

Joint resolution concurred in by senate and house, Louisiana Legislature, June 6, 1912, at the request of the Louisiana Reclamation Club.

Whereas the great flood of 1912 has demonstrated that the National Government only can obviate a recurrence of such overflow disasters in the future by a national policy under which an adequate levee system will be built and maintained as national fortification against invasion and destruction by the forces of nature; and

Whereas the steadily increasing volume of the floods in the lower Mississippi Valley has been largely caused by the changed condition of the watershed in the States comprising the drainage basin of the Ohio, upper Mississippi, and Missouri Rivers: and

Whereas these causes and conditions are beyond the control of the States bordering the Mississippi from Cairo to the Gulf, and can only be controlled by the National Government: Now therefore be it

Resolved by the house of representatives of the State of Louisiana (the Senate concurring therein), That the National Government should immediately extend such temporary relief as may be necessary to repair the broken levees and to maintain them in future, and to control the river in its channel by revetments and bank protective works which will safeguard against the destruction of levees by caving banks and shifting channels.

Resolved further, That in working out plans for flood prevention and the protection of the lowlands of the Mississippi Valley from overflow, the Mississippi River and all its tributaries and source streams should be treated as a unit, and a comprehensive and adequate levee system, to be permanently maintained by the National Government, should be supplemented by a system of reservoirs on the headwaters of the Ohio and its tributaries, and also on the upper Mississippi, and by a system of flood-water canals and storage reservoirs in the Missouri River Valley by means of which the flood plane at Cairo would at all times be so reduced that no combination of high water in the three upper rivers would ever create a great flood in the lower Mississippi Valley, and at the same time prevent overflow and damage by floods in the valleys of the Ohio, the upper Mississippi, and Missouri Rivers.

Resolved further, That the Nation can not longer afford to permit its resources of soil, of power, of water, and of navigation to be carried as a wasteful and destructive flood to the sea, and that since the States themselves can not, in the general interest, prevent this waste, the Federal Government should conserve such floods at their sources and subject the now wasted waters to beneficial use.

Resolution of the Assembly of the State of California.

The following resolution was offered by Mr. Guiberson:

" Whereas a bill has been introduced in the Senate of the United States by Hon. Francis G. Newlands, of Nevada, which, according to its title, proposes 'to create a board of river regulation and to provide a fund for the regulation and control of the flow of navigable rivers in aid of interstate commerce, and as a means to that end to provide for flood prevention and protection, and for the beneficial use of flood waters and for water storage, and for the protection of watersheds from denudation and erosion, and from forest fires, and for the cooperation of Government services and bureaus with each other and with States, municipalities, and other local agencies'; and

" Whereas it has been proposed by the leading supporters of said bill that it be amended so as to provide for an appropriation of $5,000,000 annually for 10 years for the control of the Sacramento and San Joaquin Rivers and their tributaries, and for a like appropriation for the control of the Colorado River; and

" Whereas this legislature is in hearty accord with the principles embodied in said bill, and believes that the money proposed to be expended under it and the cooperation provided for in it will promote the general welfare; and

" Whereas the vastness and variety of the interests that will be benefited by the expenditures contemplated in the proposed amendments fully justify such participation by the National Government in the work of making the navigable streams of California as useful as possible to the public: Therefore be it

"*Resolved by the Assembly of the State of California*, That the Congress of the United States be, and both branches of said body hereby are, requested to pass said bill, with the amendments aforesaid, and that the Representatives of California in the Senate and the House of Representatives be requested to use their best efforts to that end; and be it further

"*Resolved*, That the chief clerk of the assembly be, and he hereby is, directed to send a copy of this resolution to each Senator and Representative in Congress from this State, to Hon. Francis G. Newlands, to the Vice President of the United States, and to the Speaker of the House of Representatives."

Adopted this 4th day of February, 1913.

L. B. MALLORY, *Chief Clerk*.

Joint resolution of the Legislature of South Dakota.

A joint resolution and memorial requesting the Congress of the United States to pass the Newlands bill, relating to river regulation.

Be it enacted by the Senate of the State of South Dakota (the House of Representatives concurring):

SECTION 1. That the Congress of the United States is hereby memorialized to enact during the present session the Newlands bill, providing for the creation of a board of river regulation and for the control and beneficial use of flood waters, and we urge our Senators and Representatives in Congress to employ their best efforts to accomplish this end.

STATE OF SOUTH DAKOTA,
DEPARTMENT OF STATE.

UNITED STATES OF AMERICA, *State of South Dakota, ss:*

I, Frank Glasner, secretary of state of the State of South Dakota, do hereby certify that the annexed bill, to wit, senate joint resolution No. 14, was duly passed by the 1913 session of the Legislature of the State of South Dakota and is now in full force and effect.

In testimony whereof I have hereunto set my hand and affixed the great seal of the State of South Dakota this 4th day of February, A. D. 1913.

FRANK GLASNER,
Secretary of tState.
By J. T. NELSON,
Assistant Secretary of State.

Mr. NEWLANDS. The President elect, Mr. Wilson, has also declared himself on this subject in a telegram addressed to me, as president of the recent irrigation congress, as follows:

SEA GIRT, N. J., *September 30, 1912.*

Hon. FRANCIS G. NEWLANDS,
President National Irrigation Congress, Salt Lake, Utah:

Please express to the National Irrigation Congress my hearty approval of the policy it is met to promote, and especially of the policy of supplementing bank and levee protection by storage of flood waters above for irrigation and water power, turning floods from a menace into a blessing and at the same time abundantly feeding navigable waters.

WOODROW WILSON.

[C. A. Woolsey Paint & Color Co., manufacturers and importers of paints and varnishes.]

JERSEY CITY, N. J., *December 26, 1912.*

Hon. FRANK O. BRIGGS, *Washington, D. C.*

SIR: Communications have been received by us from a number of our customers located in the South, who have been affected by the overflowing of the Mississippi River in the recent and past floods which have occurred in that section, and earnestly request our cooperation for the immediate enactment of the Newlands river-regulation bill, S. 10900, Sixty-first Congress, third session, introduced in the Senate by Senator Newlands on March 1, 1911, entitled:

"A bill to create a board of river regulation and to provide a fund for the regulation and control of the flow of navigable rivers in aid of interstate commerce, and as a means to that end, and to provide for flood prevention and protection and for the beneficial use of flood waters and for water-storage and for the protection of watersheds from denudation and erosion and from forest fires and for the cooperation of Government services and bureaus with each other and with States, municipalities, and local agencies."

For the further purpose of uniting forces for an organized demand on the Congress at Washington our friends of the South have issued a call requesting friends of the movement to attend the National River Regulation and Flood Prevention Congress to be held in New Orleans January 6 and 7, 1913.

We are naturally interested in the growth, progress, and upbuilding of the South, both from a business standpoint and a feeling that the lives and property of those living in such places should be looked after to a certain extent by our Government, and we therefore respectfully refer the matter to you for your consideration, hoping that you may see your way clear to support the proposed legislation, as we believe that they are justified in looking to the country at large to help them in this matter.

Very truly, yours,

C. A. WOOLSEY PAINT & COLOR CO.,
F. WOOLSEY, *President.*

LIST OF SOME OF THE ORGANIZATIONS WHICH HAVE INDORSED THE NEWLANDS RIVER-REGULATION BILL SPECIFICALLY OR IN PRINCIPLE, WITH COPIES OF SOME OF THEIR RESOLUTIONS.

The bill has been indorsed, among others, by the Pittsburgh Chamber of Commerce, the Nineteenth National Irrigation Congress, the National Rivers and Harbors Congress (in principle), the National Drainage Congress, the New

Orleans Progressive Union, the Louisiana Reclamation Club, the Louisiana Bankers' Association, the Illinois Association of Drainage and Levee Districts, St. Louis Merchants' Exchange, City Club of Memphis, and by the following organizations in California:

California section of the National Irrigation Association; boards of supervisors of the counties of Madera, Merced, and San Joaquin; the chambers of commerce of the cities of San Francisco, Madera, Merced, Ceres, Modesto, Lodi, and Fresno, and of Stanislaus County; the La Grande Board of Trade; the Los Angeles Clearing House Association; the cities of Madera, Turlock, and Modesto; the Women's Improvement Clubs of Madera, Merced, Modesto, Livingston, Escalon, Salida, and Raymond; and the River Regulation Commission of Stockton.

LOS ANGELES CLEARING HOUSE ASSOCIATION.

Resolutions indorsing and advocating the enactment by the Congress of the Newlands river-regulation bill (Senate bill 122, introduced Apr. 6, 1911, by Senator Francis G. Newlands) entitled "A bill to create a board of river regulation, and to provide a fund for the regulation and control of the flow of navigable rivers in aid of interstate commerce, and, as a means to that end, to provide for flood prevention and protection, and for the beneficial use of flood waters and for water storage, and for the protection of watersheds from denudation and erosion and from forest fires, and for the cooperation of Government services and bureau with each other and with States, municipalities, and other local agencies" :

" Whereas reports made by Maj. J. W. Powell, first Director of the United States Geological Survey; Gen. Hiram M. Chittenden, of the Engineer Corps of the United States War Department; United States Engineer Ullert; and others; also through surveys and investigations made by the Pittsburgh flood commission, have shown the practicability of the storage of the flood waters of the rivers of the whole country, to the end that destructive floods may be controlled and the waters heretofore wasted may be conserved for the use of navigation and irrigation where required; also the necessity of the drainage of the swamp and overflowed lands; and

" Whereas a condition which now causes wide devastation it is shown may be controlled and transformed into a great natural resource, reclaiming millions of acres of land now uncultivatable, thus benefiting and enriching every section of the country from the Atlantic to the Pacific; and

" Whereas the Newlands river-regulation bill embodies the provisions requisite for the carrying into effective operation of the beneficial objects desired to be accomplished: Now therefore be it

" *Resolved*, That the Los Angeles Clearing House Association hereby indorses said Newlands river-regulation bill and requests the Senators and Congressmen from this State to urge its passage by the Congress."

I certify that the foregoing is a true and correct copy of a resolution passed at a special meeting of the Los Angeles Clearing House Association held yesterday afternoon.

JAMES B. GIST, *Secretary*.

CHAMBER OF COMMERCE OF PITTSBURGH.

[Resolution adopted Apr. 13, 1911.]

Whereas a bill was introduced in the Senate of the United States by Senator Newlands on March 1, 1911, entitled "A bill to create a board of river regulation and to provide a fund for the regulation and control of the flow of navigable rivers in aid of interstate commerce, and as a means to that end to provide for flood prevention and protection and for the beneficial use of flood waters and for water storage, and for the protection of watersheds from denudation and erosion and from forest fires, and for the cooperation of Government services and bureaus with each other and with States, municipalities, and other local agencies"; and

Whereas the primary purpose of said bill is to bring into conference and cooperation the National Government with the States, municipalities, counties, and local districts for the construction of the works necessary for the regulation of the flow of rivers and for flood prevention and protection, and provides a fund of $50,000,000 annually for 10 years for said purpose; and

Whereas the passage of said bill by Congress would result in the relief not only of Pittsburgh but of all cities and communities on the Ohio, Missouri, and Mississippi Rivers from destructive floods and increase the flow of the rivers in the low-water season for navigation: Now, therefore, be it

Resolved, That the Chamber of Commerce of Pittsburgh hereby indorses said Newlands river-regulation bill and requests the Senators and Congressmen from this State to urge its passage by Congress; and

Resolved further, That the secretary be instructed to send a copy of this resolution to all boards of trade and chambers of commerce in cities on the Ohio, Missouri, and Mississippi Rivers, and urge their active support for this measure.

The Nineteenth National Irrigation Congress on December 9, 1911, at Chicago, adopted the following as one of its resolutions:

"We indorse and recommend the Newlands bill (S. 122) to create a board of river regulation, and urge every delegate to this Congress to cooperate in all possible ways to aid in securing its enactment by the Federal Congress during the present session."

The National Rivers and Harbors Congress at Washington, D. C., on December 8, 1911, adopted the following as its first declaration:

"We urge the adoption by the Government of a broad, liberal, comprehensive, systematic, and continuous policy of waterway development, a policy which has heretofore been unanimously pledged by the great political parties of the country in convention assembled, which pledges have not as yet been redeemed."

National Drainage Congress, Chicago, Ill., December 9, 1911:

"*Resolved*, That * * * we do especially recommend the creation of a national commission to make the necessary surveys and estimates of cost and to work out a comprehensive plan of national reclamation in connection with the several States, designed to coordinate the mutual interests of the various States in a practical State and Federal system of consistent and progressive drainage, reclamation, and development; and that sufficient funds be appropriated by the National Government to carry on the work of the commission."

SAN FRANCISCO CHAMBER OF COMMERCE.

[Resolution adopted at meeting of board of directors, Jan. 5, 1912.]

Whereas a bill was introduced in the Senate of the United States by Senator Newlands on March 1, 1911, entitled "A bill to create a board of river regulation and to provide a fund for the regulation and control of the flow of navigable rivers in aid of interstate commerce, and, as a means to that end, to provide for flood prevention and protection, and for the beneficial use of flood waters, and for water storage, and for the protection of watersheds from denudation and erosion, and from forest fires, and for the cooperation of Government services and bureaus with each other and with States, municipalities, and other local agencies"; and

Whereas the primary purpose of said bill is to bring into conference and cooperation the National Government with the States, municipalities, counties, and local districts for the construction of the works necessary for the regulation of the flow of rivers and for flood prevention and protection, and provides a fund of $50,000,000 annually for 10 years for said purposes; and

Whereas the passage of said bill by Congress would result in the relief not only of Pittsburgh but of all cities and communities on the Ohio, Missouri, and Mississippi Rivers from destructive floods, and increase the flow of the rivers in the low-water season for navigation: Now, therefore, be it

Resolved, That the San Francisco Chamber of Commerce hereby indorses said Newlands river-regulation bill and requests the Senators and Congressmen from this State to urge its passage by Congress.

SAN FRANCISCO CHAMBER OF COMMERCE,
M. H. ROBBINS, Jr., *President*.
A. B. C. DOHRMANN, *Secretary*.

NATIONAL RIVERS AND HARBORS CONGRESS.

WASHINGTON, D. C., *January 15, 1912.*

Hon. JOSEPH E. RANSDELL,
President National Rivers and Harbors Congress,
Colorado Building, Washington, D. C.

DEAR SIR: At a meeting of the directors of the National Rivers and Harbors Congress immediately following the last annual meeting of the congress it was suggested that this organization should advocate a policy not only having for its purpose the improvement of waterways for navigation but for all the beneficial uses to which the water could be put. The suggestion was advanced—

First. Because the proponents believed that in no other way could an orderly and continuous development of waterway improvements be possible.

Second. Improvement and development of other beneficial uses would be in aid of and not in conflict with improvement for navigation.

Third. An enormous saving of public funds and direct lasting benefits to the public would ensue.

Fourth. It would unite in a common cause a large number of people and organizations interested in various phases of water use and control who are now advocating and exploiting the particular use only in which they are more directly concerned.

Fifth. The result would be that an irresistible public sentiment would be created to which Congress would be compelled to respond, and which would be in harmony with the declarations of the platforms of the great political parties demanding the carrying out of a policy having for its purpose the conservation and utilization of the waterway for all beneficial purposes from its source to its mouth.

No direct action was taken, but a committee was appointed charged with the duty of reporting to the directors upon the question, with the object of giving full opportunity and time for its consideration before the next annual meeting of the organization. The undersigned were appointed as such committee and beg leave to report as follows:

I. There are a number of governmental scientific agencies having in charge and under their control various national public resources. Generally speaking, these agencies are fairly equipped to carry on their work and are in charge of competent men. The Engineer Corps of the Army, the Reclamation Service, the Geological Survey, the Forest Service, and other branches of the Agricultural and Interior Departments are illustrative. These agencies in the public interest should be in the closest cooperation and coordination, but such is not the case.

II. The various departments are frequently dealing with the same agency or public resource in its application to some particular service, giving but little, if any, consideration to coordination with other available services or uses to which such agency or public resource might be put. This is not the fault of the departments, but the failure of Congress to make provisions therefor. It is the opinion of the committee that the best results can only be secured and the public interest promoted through cooperation and unity of purpose and action.

III. There is scarcely a river worthy of improvement for navigation but what has other beneficial uses to which it could be put and other conditions which require treatment and consideration, all of which bear directly upon the navigability of such river or add to the productiveness of adjacent territory or further development of such territory. We refer to forest protection, prevention of damage from flood, soil erosion, drainage, irrigation, and water-power development. It would therefore seem in the public interest that the improvement of a waterway for navigation could well contemplate the conservation and utilization of such manifestly beneficial uses at the same time.

IV. It is generally conceded that the improvement of rivers for navigation is a necessity and that this improvement should be based on a comprehensive scheme under some general plan of related projects, the work to be carried on continuously until completed.

V. At the present time there are a large number of organizations and vast numbers of people interested in various phases of water use and development which, it would seem, could be united in common purpose for a common use. Transportation is a tax that touches all, and producer and consumer alike are interested in securing cheap and efficient means of transportation. Therefore, those who create tonnage are directly interested in its reaching the markets at the lowest possible cost, and those who propose to engage in water transportation are certainly interested in the development of tonnage tributary to the waterways.

The foregoing facts are well known. The committee do not feel it incumbent upon them to enter into an extended argument to show that coordination of service and cooperation of effort between the various governmental agencies and the sovereignties, National and State, are not only desirable, but necessary, if real efficiency and the best results are to be secured. On the contrary, we feel that those who oppose such a seemingly natural, logical, and businesslike policy should show wherein the cause of the improvement of rivers for navigation would be detrimentally affected by its adoption.

In time both organizations and individuals are likely to become too conservative. In other words, the tendency is to follow rather than to lead, and we believe this organization should lead public opinion, not follow it.

We would hesitate to suggest for adoption anything of a novel character, but we are convinced that this organization must take advanced ground upon all questions respecting the improvement of our waterways and should cooperate with every individual and organization willing to work to this end.

We therefore recommend that this organization should advocate a comprehensive scheme of waterway development of related projects;

That this scheme should involve and consider all the beneficial uses which the waterway may serve or to which it may be put;

That the work of the various scientific services of the Government should be coordinated;

That the several States and the Nation should cooperate and act in harmony in all matters of common interest; and

That funds should be provided so that work on all approved projects can be carried continuously to completion.

The committee submits the foregoing suggestions for your consideration.

JOSEPH N. TEAL,
JAMES E. SMITH,
FRANCIS G. NEWLANDS,
Committee.

River regulation, in the words of George H. Maxwell, must become the campaign cry of the people of the Mississippi Valley, no matter what their party politics, if their fertile fields are to be made safe from overflow and their country is to be freed from the adverse opinion of the remainder of the world.

"The flood waters of the Mississippi River and its tributaries can be regulated and such regulation, in conjunction with a good levee system, will forever safeguard the valleys from overflows," said Mr. Maxwell, who is an ardent supporter of the Newlands river-regulation bill, to-day. "The entire country will back up the demand of the people of the Mississippi, the Ohio, and the Missouri Valleys for constructive legislation of this character."

In proof of his assertion he exhibited the following telegram from the far West:

STOCKTON, CAL., *April 8–9, 1912.*

Mr. GEORGE H. MAXWELL,
Executive Chairman Board of Control,
National Drainage Congress, St. Charles Hotel, New Orleans.

DEAR SIR: We extend our heartful sympathy to the sufferers from the present floods in the East and the South. Our sympathy is tinctured with shame, as we know that the appalling loss of life and property could and ought to have been prevented. As a people we have the intelligence and the money to do the required work that will control forever the flood area of our country, whether in the East, the South, or the West. We know how to change the awful destructive flood forces into constructive and beneficial powers. With these forces we can improve and make permanently navigable our inland waterways, generate enormous quantities of electric power, make safe the investments and increase the improvements in our great valleys, and while doing so shall remove the danger of drought or fear of it. The time is opportune for an immediate start on this great work. The Panama Canal is now nearly finished. Even now the services of a part of the splendid working army is being dispensed with and part of the equipment is being sold. These trained men should be kept together, and the equipment that can be used in the South and East or in the West should be at once put in order for the work that must be done to save the lives and property of our people by properly conserving the natural forces and resources of our country. There can be no excuse for another hour's delay. The sinking of the *Maine* with so large a part of her gallant crew in Habana aroused our people to war. What can we say to a watching world if we refuse to act as promptly and as energetically when the lives of our people are being taken by floods that we can control or droughts that we can prevent? To the loss of life we must add the destruction of property so vast that its value, if wisely used, would prevent forever such losses. Under such conditions can we still say that we have a government of the people, by the people, and for the people, to enable us, a people, to claim without shame that we so govern ourselves? We pray that you will take such action at New Orleans and immediately thereafter at Washington that the Newlands bill may be enacted into law and the good work of conservation and control be started without further delay.

Yours, truly,

THE RIVER REGULATION COMMISSION OF STOCKTON, CAL.,
By J. L. CRAIG, *Chairman.*

Resolutions of Southern Commercial Congress.

NASHVILLE, TENN., *April 9, 1912.*

We urge the immediate adoption by Congress of a broader, more aggressive, comprehensive, systematic, and continuous policy of waterway improvement, thereby carrying out the wish of people of the country as expressed in the platforms of both the great political parties in the national conventions of 1908, to the fulfillment of which both parties pledged themselves, but which pledges have not been redeemed.

We favor the adoption of a law by Congress granting the use of the Panama Canal to American ships engaged in coasting commerce free of tolls, and the prevention of the use of the canal by any steamship line owned or controlled by a railroad or any monopolistic interest.

We favor such legislation as is necessary to induce the construction of a merchant marine for the United States and the carrying of American commerce in American ships made under the American flag.

EXTENSION OF POWERS.

We recommend that the powers of the Interstate Commerce Commission be extended over shipment by water, so as to oblige proper division of rates by railroads and connections, and fix minimum as well as maximum rates for water-borne traffic.

Properly equipped terminals being as essential as channels to the successful use of waterways, we urge that such terminals be provided under public ownership or control, so that they may be open to all comers on equal and reasonable terms.

We favor liberal annual appropriations for the improvement of river and harbors, and disapprove the policy of delay and interruption in work begun and of practicing economy at the expense of the construction work of the Government.

We urge upon Congress the adoption of such laws as will compel coordination and cooperation between railways and waterways in the interchange of traffic, and that will remove destructive competition of railways against waterways.

Resolution of Chamber of Commerce of Pittsburgh, adopted April 13, 1911.

CHAMBER OF COMMERCE OF PITTSBURGH,
OFFICE OF THE SECRETARY.

Whereas a bill was introduced in the Senate of the United States by Senator Newlands on March 1, 1911, entitled "A bill to create a board of river regulation and to provide a fund for the regulation and control of the flow of navigable rivers in aid of interstate commerce, and as a means to that end to provide for flood prevention and protection, and for the beneficial use of flood waters, and for water storage, and for the protection of watersheds from denudation and erosion and from forest fires, and for the cooperation of Government services and bureaus with each other and with States, municipalities, and other local agencies"; and

Whereas the primary purpose of said bill is to bring into conference and cooperation the National Government with the States, municipalities, counties, and local districts for the construction of the works necessary for the regulation of the flow of rivers and for flood prevention and protection, and provides a fund of $50,000,000 annually for 10 years of said purpose; and

Whereas the passage of said bill by Congress would result in the relief not only of Pittsburgh but of all cities and communities on the Ohio, Missouri, and Mississippi Rivers from destructive floods and increase the flow of the rivers in the low-water season for navigation: Now therefore be it

Resolved, That the Chamber of Commerce of Pittsburgh hereby indorses said Newlands river-regulation bill and requests the Senators and Congressmen from this State to urge its passage by Congress; and

Resolved further, That the secretary be instructed to send a copy of this resolution to all boards of trade and chambers of commerce in cities on the Ohio, Missouri, and Mississippi Rivers, and urge their active support for this measure.

[From the Fresno Republican, Apr. 10, 1912.]

CHAMBER INDORSES NEWLANDS BILL FOR RIVERS.

The board of directors of the Fresno Chamber of Commerce yesterday passed a resolution presented by John Fairweather, vice president of the National Irrigation Congress, in which it indorsed the Newlands river-regulation bill, now before Congress. Copies of the resolution will be forwarded to the California Representatives at Washington. The resolution is as follows:

Whereas a bill was introduced in the Senate of the United States by Senator Newlands on March 1, 1911, entitled "A bill to create a board of river regulation and to provide a fund for regulation and control of the flow of navigable rivers, in aid of interstate commerce," and as a means to that end to provide for flood prevention and protection and for the beneficial use of flood waters, protection of watersheds from denudation and erosion, and from forest fires, and for the cooperation of Government services and bureaus with each other and with States, municipalities, and other local agencies; and

Whereas the primary purpose of said bill is to bring into conference and cooperation the National Government with the States, municipalities, counties, and local districts for the construction of the works necessary for the regulation of the flow of rivers and for flood prevention and protection, and provides a fund of $50,000,000 annually for 10 years for said purposes; and

Whereas the passage of said bill by Congress would result in the relief not only of Pittsburgh, but of all cities and communities on the Ohio, Missouri, Mississippi, Sacramento, San Joaquin, and Kings River, from destructive floods and increase the flow of the rivers in the low-water season for navigation and irrigation: Therefore be it

Resolved, That the Fresno County Chamber of Commerce hereby indorses said Newlands river regulation bill and requests the Senators and Congressmen from this State to urge its passage by Congress.

The supervisors followed yesterday the example of the directors of the chamber of commerce, and on the showing made by John Fairweather, vice president of the National Irrigation Congress, indorsed the Newlands river regulation bill in Congress as a measure of relief against destructive floods, while also one for increasing the flow of rivers in low-water season for navigation and irrigation.

[From the Madera (Cal.) Tribune, Apr. 15, 1912.]

RESOLUTIONS FAVORING FLOOD-WATER CANAL.

The following resolutions were adopted at the District Federation of Women's Clubs in Fresno at their recent session:

Resolutions indorsing the Newlands bill and the resolutions of the California Legislature requesting the Federal Government to construct a flood-water canal and reservoir from the San Joaquin River, near Pollasky.

Be it resolved, That the California Federation of Women's Clubs for the San Joaquin district, in convention assembled in the city of Fresno, indorse the Newlands bill in Congress (S. 122) and the resolutions of the California Legislature requesting the Federal Government to construct a flood-water canal and reservoir from the San Joaquin River; and be it further

Resolved, That our Senators, Hon. George C. Perkins and Hon. John D. Works, and our Representatives, Hon. J. C. Needham, Hon. John E. Raker, Hon. William D. Stephens, Hon. S. C. Smith, Hon. E. A. Hayes, Hon. Julius Kahn, Hon. Joseph R. Knowland, and Hon. William Kent, be, and they are, requested to use all honorable means at the present session of Congress to secure the legislation requested in said resolutions; and be it further

Resolved, That the secretary of this convention be, and she is hereby, directed to mail forthwith to each of our said Senators and Representatives a copy of these resolutions.

LOUISIANA BANKERS' ASSOCIATION.

Resolution adopted at annual meeting, Covington, La., April 27, 1912.

Whereas a bill was introduced in the Senate of the United States by Senator Newlands on March 1, 1911, entitled "A bill to create a board of river regulation and to provide a fund for the regulation and control of the flow of navigable rivers in aid of interstate commerce, and as a means to that end to provide for flood prevention and protection and for the beneficial use of flood waters and for water storage, and for the protection of watersheds from denudation and erosion and from forest fires, and for the cooperation of Government services and bureaus with each other and with States, municipalities, and other local agencies"; and

Whereas the primary purpose of said bill is to bring into conference and cooperation the National Government with the States, municipalities, counties, and local districts for the construction of the works necessary for the regulation of the flow of rivers and for flood prevention and protection, and provide a fund of $50,000,000 annually for 10 years for said purposes; and

Whereas the passage of said bill by Congress would result in the relief not only of Pittsburgh but of all cities and communities on the Ohio, Missouri, and Mississippi Rivers from destructive floods and increase the flow of the rivers in the low-water season for navigation: Now, therefore, be it

Resolved, That the Louisiana Bankers' Association hereby indorses said Newlands river-regulation bill and requests the Senators and Congressmen from this State to urge its passage by Congress.

LOUISIANA BANKERS' ASSOCIATION.

STOCKTON, CAL., *April —, 1912.*

Mr. GEO. H. MAXWELL,
Executive Chairman Board of Control,
National Drainage Congress,
St. Charles Hotel, New Orleans, La.

DEAR SIR: We extend our heartfelt sympathy to the sufferers from the present floods in the East and the South. Our sympathy is tinctured with shame, as we know that the appalling loss of life and property could and ought to have been prevented. As a people, we have the intelligence and the money to do the required work that will control forever the flood area of our country, whether in the East, the South, or the West. We know how to change the awful destructive flood forces into constructive and beneficial powers. With these forces we can improve and make permanently navigable our inland waterways, generate enormous quantities of electric power, make safe the investments, and increase the improvements in our great valleys, and while doing so we shall remove the danger of drought or fear of it. The time is opportune for an immediate start on this great work. The Panama Canal is nearly finished. Even now the services of a part of the splendid working army is being dispensed with and part of the equipment is being sold. These trained men should be kept together, and the equipment that can be used in the South and East or in the West should be at once put in order for the work that must be done to save the lives and property of our people by properly conserving the natural forces and resources of our country. There can be no excuse for another hour's delay. The sinking of the *Maine*, with so large a part of her gallant crew, in Habana aroused our people to war. What can we say to a watching world if we refuse to act as promptly and as energetically when the lives of our people are being taken by floods that we can control or droughts that we can prevent? To the loss of life we must add the destruction of property so vast that its value if wisely used would prevent forever such losses. Under such conditions can we still say that we have a government of the people, by the people, and for the people? To enable us, a people, to claim without shame that we so govern ourselves we pray that you will take such action at New Orleans and immediately thereafter at Washington that the Newlands bill may be enacted into law and the good work of conservation and control be started without further delay.

Yours, truly,

THE RIVER REGULATION COMMISSION OF STOCKTON, CAL.,
By J. L. CRAIG.

NEW ORLEANS PROGRESSIVE UNION.

Resolution adopted at meeting of board of directors May 2, 1912.

Whereas a bill was introduced in the Senate of the United States by Senator Newlands on March 1, 1911, entitled "A bill to create a board of river regulations and to provide a fund for the regulation and control of the flow of navigable rivers in aid of interstate commerce, and as a means to that end to provide for flood prevention and protection and for the beneficial use of flood waters and for water storage, and for the protection of watersheds from denudation and erosion and from forest fires, and for the cooperation of Government services and bureaus with each other and with States, municipalities, and other local agencies"; and

Whereas the primary purpose of said bill is to bring into conference and cooperation the National Government with the States, municipalities, counties, and local districts for the construction of the works necessary for the regulation of the flow of rivers and for flood prevention and protection, and provides a fund of $50,000,000 annually for 10 years for said purposes; and

Whereas the passage of said bill by Congress would result in the relief not only of Pittsburgh, but of all cities and communities on the Ohio, Missouri, and Mississippi Rivers, from destructive floods and increase the flow of the rivers in the low-water season for navigation: Now, therefore, be it

Resolved, That the New Orleans Progressive Union hereby indorses said Newlands river-regulation bill and requests the Senators and Congressmen from this State to urge its passage by Congress.

NEW ORLEANS PROGRESSIVE UNION,
JAMES W. PORCH, *President.*
M. B. TREZEVANT, *Secretary-Manager.*

LOUISIANA RECLAMATION CLUB.

Resolution adopted at meeting held Tuesday, May 14, 1912.

Whereas throughout a wide extent of country that is comprised within the trade territory of New Orleans the great flood of 1912 in the Mississippi Valley has made thousands homeless, ruined crops, drowned live stock, destroyed buildings and improvements, and will seriously retard the advancement and development of that territory; and

Whereas every business man and property owner in New Orleans will feel the loss from this great disaster in a decreased volume of business, deferred collections, reduced property values, stagnation of trade, and lessened demand for real estate; and

Whereas the danger of a recurrence of such disasters is a menace to the prosperity, growth, and development of New Orleans, and such danger can only be permanently removed through the adoption by the Congress of the United States of a broad national policy under which the Federal Government will in future guarantee protection against overflow by taking over and maintaining the levee systems as national fortifications against invasion by the destroying forces of nature, just as it now maintains military and naval forces and builds fortifications as defenses against foreign invasion; and

Whereas the construction of the great engineering works and reservoirs that would store the floods of the Ohio River and thereby aid in affording protection from overflow in the lower Mississippi Valley is warranted by the benefits therefrom to the Ohio Valley alone in flood prevention, incidental power development, and navigation, and a similar policy is likewise justified in the Missouri Valley for the same reasons, and also because the water there may be used for the irrigation of millions of acres of arid lands; and

Whereas in no possible way can the construction of such works for headwater control of the floods in the territory of their origin do otherwise than benefit the lower Mississippi Valley by regulating the flow of the river, and thereby improving it for navigation and giving additional security and protection against floods; and

Whereas the steadily increasing volume and rising flood plane of the flood in the Mississippi Valley have been largely caused by the changed conditions of the lower watershed in the States comprising the drainage basin of the Ohio, upper Mississippi and Missouri Rivers, and those conditions and causes are beyond the control of the States bordering the Mississippi River from Cairo to the Gulf, and can only be controlled by the Federal Government: Now, therefore, be it

Resolved, That the Federal Government should immediately extend such temporary relief as may be necessary to repair the broken levees and to maintain them in future, and to control the river in its channel by revetments and bank protective works which will safeguard against the destruction of levees by caving banks and shifting channels; and

Resolved further, That in working out plans for flood prevention and the protection of the lowlands of the Mississippi Valley from overflow the Mississippi River and all its tributaries and source streams should be treated as a unit, and a comprehensive and adequate levee system to be permanently maintained by the National Government should be supplemented by a system of reservoirs on the headwaters of the Ohio and its tributaries, and also on the upper Mississippi, and by a system of flood-water canals and storage reservoirs in the Missouri River Valley, by means of which the flood place at Cairo would be at all times so reduced that no combination of high water in the three upper rivers would ever create a great flood in the lower Mississippi Valley, and at the same time prevent overflow and damage by floods in the valleys of the Ohio, the upper Mississippi, and the Missouri Rivers; and

Resolved further, That the Nation can not longer afford to permit its resources of soil, of power, of water, and of navigation to be carried as a wasteful and destructive flood to the sea, and that since the States themselves can not, in the general interest, prevent this waste, the Federal Government should conserve such floods at their sources and subject the now wasted waters to beneficial use; and

Resolved further, That the Louisiana Reclamation Club hereby indorses and approves the resolution of the Pittsburgh Chamber of Commerce adopted on April 13, 1911, indorsing the Newlands river-regulation bill, and urging its passage by Congress; and

Resolved further, That the business men and property owners of New Orleans be, and they are hereby, urged to extend their hearty personal cooperation and financial support to the Louisiana Reclamation Club in its work for the organization of a national campaign, through the National Reclamation Association, to accomplish the early passage of the Newlands river-regulation bill by Congress.

[Night letter.]

WESTERN UNION TELEGRAPH CO.,
Stockton, Cal., May 23, 1912.

Mr. GEORGE H. MAXWELL, *New Orleans, La.*

We on the coast believe this is the opportune moment to force passage of the Newlands bill. The present disaster in the Mississippi Valley should of itself be sufficient reason to prompt its passage. If existing conditions in Mississippi Valley do not change the inertia of Congress we can not conceive what would be impressive enough to cause them to perform their duty. Keep us informed of any important movement at any point.

THE RIVER REGULATION COMMISSION OF STOCKTON, CAL.,
J. L. CRAIG, *President.*

LOS ANGELES CHAMBER OF COMMERCE,
Los Angeles, Cal., June 13, 1912.

Resolution indorsing and advocating the enactment by the Congress of the Newlands river-regulation bill (S. 122), introduced April 6, 1911, by Senator Francis G. Newlands, entitled: "A bill to create a board of river regulation and to provide a fund for the regulation and control of the flow of navigable rivers in aid of interstate commerce, and as a means to that end to provide for flood prevention and protection and for the beneficial use of flood waters and for water storage, and for the protection of watersheds from denudation and erosion and from forest fires, and for the cooperation of Government services and bureaus with each other and with States, municipalities, and other local agencies." * * *

Whereas reports made by Maj. J. W. Powell, first Director of the United States Geological Survey, and later surveys, investigations, and reports of the Geological Survey; also reports by Gen. Hiram M. Chittenden, of the Engineer Corps of the United States War Department, Engineer Charles Ellet, jr., and others; also surveys and investigations made by the Pittsburgh flood commission have shown the practicability of the storage of the flood waters of the rivers of the whole country to the end that destrucive floods may be controlled and the waters heretofore wasted may be conserved for the use of navigation and irrigation where required; also the necessity of the drainage of the swamp and overflowed lands;

Whereas a condition which now causes wide devastation it is shown may be controlled and transformed into a great natural resource, reclaiming millions of acres of land now uncultivated, thus benefiting and enriching every section of the county from the Atlantic to the Pacific; and

Whereas the Newlands river-regulation bill embodies the provisions requisite for the carrying into effective operation of the beneficial objects desired to be accomplished: Now, therefore, be it

Resolved, That the Los Angeles Chamber of Commerce hereby indorses the said Newlands river-regulation bill and requests the Senators and Congressmen from this State to urge its passage by the Congress, and approves the resolution of the Pittsburgh Chamber of Commerce indorsing said bill, adopted by that body on April 13, 1912; and be it further

Resolved, That the National Irrigation Association and National Reclamation Association be, and are hereby, urged to at once put forth all thier effort toward inaugurating and carrying on a campaign directed toward the furtherance of the purpose of the foregoing resolution.

I hereby certify that the above is a true and correct copy of the resolution adopted by the board of directors of the Los Angeles Chamber of Commerce at their regular meeting held June 12, 1912.

H. Z. OSBORNE, *President.*

Attest:

H. B. GURLEY, *Assistant Secretary.*

Resolution of the Twentieth Irrigation Congress, at Salt Lake City, October 3, 1912.

We renew our indorsement of the Newlands river-regulation bill and urge its enactment by the Federal Congress during the coming session. The bill provides for the complete control of the flood waters of our rivers in such a way as to promote irrigation and drainage, the development of power, the extension of navigation, and the protection of the lowlands from destructive floods.

PHILADELPHIA BOARD OF TRADE,
Philadelphia.

To the honorable the Senate and House of Representatives of the United States in Congress assembled:

This memorial of the Philadelphia Board of Trade respectfully represents:

That, through its committee on inland transportation, it has examined the provisions of Senate bill No. 122, introduced by Senator Newlands, having for its purpose the creation of a board of river regulation with the view of securing the maintenance by the Federal Government of an adequate levee and bank revetment system in the low States bordering the Ohio and Mississippi Rivers and for the ultimate adoption of a policy of stream control which shall check and minimize the formation of floods, which have proved so disastrous in the loss of life and property.

That the yearly damage caused by preventable floods in the drainage basin of the Ohio River, and the damage caused by the great flood of 1912 in the Mississippi Valley, certainly justify the most liberal appropriations and the most careful study for their causes, with the view of securing remedial measures for their prevention.

That Philadelphia, while far removed from the territory affected by these floods, sympathizes with the sufferers therefrom and believes that in the last analysis the great losses affect unfavorably every business interest, and the General Government is called upon to aid by legislation in securing for the afflicted sections of the country immunity from the recurrence of these devastating floods: Therefore

Your memorialist, the Philadelphia Board of Trade, petitions your honorable bodies to favorably consider and pass Senate bill No. 122, known as the " Newlands river-regulation bill."

And your memorialist will ever pray.

[SEAL.]

WM. M. COATES,
President Philadelphia Board of Trade.

Attest:

W. R. TUCKER, *Secretary.*

Resolutions of the National Flood Prevention and River Regulation Conference at New Orleans. Unanimously adopted January 7, 1913.

Whereas the great flood of 1912 in the lower Mississippi Valley demonstrated the necessity for the complete national regulation of our rivers from source to mouth, including their tributaries, in such a way as to restrain the floods, not only by levee construction, revetments, and bank protection in the lower river valleys, but also by source-stream control of the flood waters, so far as possible, in the territory of their origin, by all adequate and practicable means of water conservation, including flood-water canals and reservoirs, in aid of navigation, reclamation, and power development, thus transforming the floods from agencies of destruction into agencies of production and saving for beneficial use the enormous national wealth that now goes to waste in floods and maintaining a sustained and well-regulated flow for navigation; and

Whereas the policy approved and ureged by President-elect Woodrow Wilson, in his telegram to Hon. Francis G. Newlands, of September 29, 1912, which has been read to this conference, of supplementing bank and levee protection by the storage of flood waters above for irrigation and water power, thereby turning floods from a menace into a blessing and at the same time abundantly feeding navigable waters, can be best carried into practical effect and operation by concentrating constructive effort upon the greater river systems of the country and treating each of such systems as a unit from source to mouth and completing, with all possible expedition, adequate levees and bank-protective works in the lower valleys as national defenses against the destroying forces of nature, supplementing such works of defense by the simultaneous construction of all effective and practicable works for source-stream control; and

Whereas in order that this may be done it is necessary that an appropriation should be made sufficient for the entire work of construction, without interruption or delay, in the same continuous way in which the work on the Panama Canal has been so rapidly pushed forward to completion; Now, therefore, be it

Resolved, That as rapidly as the works on the Isthmus are completed so as to dispense with them there that the trained force of engineers and skilled workmen and such machinery as may be available for and adapted to this new work shall be forthwith transferred to the Mississippi Valley and there set to work under the same competent leadership which has directed their work on the Panama Canal, to the end not only that all destructive floods in the "Sugar Bowl of the Continent" in the valley of the Mississippi River, as well as its tributaries, shall be forever safeguarded against and the shadow of their menace lifted forever from the pathway of its future progress and development, but also that the great Isthmian waterway now approaching completion shall be supplemented by the most complete system of inland waterways existing in any nation of the world; and be it further

Resolved, That the Newlands-Bartholdt river-regulation bill, in order that it may more fully and completely accomplish the great objects above set forth, shall specifically appropriate not less than $10,000,000 annually, $100,000,000 in all, for work on the Mississippi River and its tributaries, other than the Ohio, from St. Louis to the Gulf; and $10,000,000 annually for 10 years, $100,000,000 in all, for work in the drainage basin of the Missouri River; and $10,000,000 annually for 10 years, $100,000,000 in all, for work in the Ohio River drainage basin; and $5,000,000 annually for 10 years, $50,000,000 in all, for work in the drainage basin of the Colorado River; and $5,000,000 annually for 10 years, $50,000,000 in all, for work in the drainage basin of the rivers of the Sacramento and San Joaquin Valleys in California; and be it further

Resolved, That the annual appropriation for 10 years to the Corps of Engineers of the United States Army shall be increased in said bill from $24,000,000 to $29,000,000, $290,000,000 in all, to be expended for levees, revetments, and other works for river regulation and control, as now specified in said bill, and also for building bank-protective works to prevent erosion and cutting of the banks and consequent caving and destruction of the levees and to control the river and hold it in a permanently fixed and established channel; and be it further

Resolved, That the said bill be further amended so as to specify more particularly in its title and in the first-section of the bill its purpose and object of preventing silt and sedimentary material from being carried into and deposited in navigable rivers, channels, and harbors, and for the conservation of the water resources of the United States, and that in subsequent sections of the bill its purpose of promoting river regulation by land reclamation should be, wherever provided for, made to include drainage to an equal extent with irrigation in order that the flow of rivers shall be regulated and controlled in aid of navigation, not only by the use of flood waters for irrigation on the upper tributaries, but also by controlling them in fixed and established channels in the lower valleys, thereby aiding navigation and at the same time promoting land reclamation by both irrigation and drainage; and be it further

Resolved, That the specific appropriation in said bill for the Bureau of Plant Industry of the Department of Agriculture shall be reduced from two to one million dollars annually for 10 years, and that the appropriation for the Forestry Service for the acquisition of lands under the Appalachian Act shall be reduced from five to one million dollars annually for 10 years, the total amount of said reductions to be added to the appropriation for the Corps of Engineers of the United States Army for work under said bill as hereinbefore provided; and be it further

Resolved, That on international rivers or streams the board of river regulation may cooperate with other nations and the representatives thereof in the same manner and to the same extent that they are now directed by said bill to cooperate with the States of the United States; and be it further

Resolved, That the president of the Mississippi River Commission shall be a member of the board of river regulation created by said bill; and be it further

Resolved, That, in the judgment of this conference, the passage by Congress of the Newlands-Bartholdt river-regulation bill can be accomplished by a great educational campaign similar to that which resulted in the passage of the national irrigation act and the Appalachian act, and that to facilitate and expedite the conduct of such a campaign the National Irrigation Association and the National Reclamation Association should be merged into one great national organization under the broader name of the National Reclamation Association, more particularly as the national irrigation act is officially known as the United States reclamation act and the Government service created by that act and through which it is administered is known as the United States Reclamation Service.

NEWSPAPER COMMENTS AND EDITORIALS FAVORABLE TO THE NEWLANDS RIVER REGULATION BILL.

[From the Philadelphia Evening Item.]

RIVER NAVIGATION AND FLOODS.

PHILADELPHIA, PA., *March 13, 1911.*

Senator Francis G. Newlands, of Nevada, is one of the best-informed men on the subject of river navigation in the United States. In his recent speech in the Senate on this subject he gave the Nation an amount of practical information which, so far as we know, is unmatched in the same space to be found anywhere. We can touch on a few points only here.

He said we must realize that the country needs and demands legislation from Congress that will include regulation, improvement, and development of all the waterways of the United States under broad and comprehensive plans.

Regarding irrigation work, with only eight years' work we have to-day 23 projects, some completed and all well along toward completion.

So far these newly irrigated lands have become the most valuable, or as valuable, per acre of any producing lands in the United States, lands which a decade ago could not even be given away, so worthless in their desert aspects did they appear to the farmer.

Methods can and will be devised for the Nation to cooperate with the States to provide a proper apportionment of costs and benefits, so instead of wasting time on question of jurisdiction we could unite all powers and create a common benefit for all the people.

The development of our waterways as efficient machines for transportation requires primarily the regulation of river flow. For if the flow of the rivers be regulated in such a way as to avoid the extreme of floods and the opposite extreme of low water, we will always have in the rivers a navigable stage of water to transport boats for passengers and freight.

We must first prevent floods. We can make use of the natural reservoirs which nature has provided for the absorption of the rains, and we can create artificial reservoirs for the storage of flood waters, as we are now doing on the Panama Canal.

The natural reservoirs are the forests and the agricultural lands, which absorb the rainfall and the melting snows. Our aim should be to everywhere increase the porosity and absorbent properties of the soil and thus prevent the run-offs which swell our streams into great floods, which now aggregate a damage upon property of the stupendous sum of nearly two hundred millions a year in the United States.

Aside from the question of whether or not the denudation of our forests will diminish rainfall, there can be no doubt whatever that the destruction of forest growth will diminish the absorption of falling waters on the soil.

The reports of the Geological Survey show clearly that wherever there has been a destruction of forest growth there follows immediately a hardening of the surface, the erosion of the soil, and the rapid run-off, which carries the soil and silt and the material from the mountains and hillsides down into the channels of the rivers, choking navigation. Therefore the preservation of the forests upon these great watersheds, which are the sources of water supply, is an essential element in the control of floods, which affect the channels of navigable rivers.

The next thing to consider is the increase of the absorbent properties of the soil itself wherever it is farmed or cultivated. Plowing and cultivation of terraced and irrigated fields, systematically practiced, facilitate the absorption of moisture. By such and like scientific means the soil is prevented from being washed into the creeks and streams and finally into the navigable rivers; they arrest this constant flow of vast areas of alluvial soil down into the Ohio, the Missouri, and the Mississippi Rivers, and also from the Appalachian Mountains and the White Mountains and the Allegheny Mountains down the rivers that flow into all the channels emptying into the bays and sounds on the Atlantic seaboard.

In that manner, adds Mr. Newlands, we will not only perform the work of facilitating the storage of water in the soil by intelligent methods of cultivation, and thereby aid in regulating the river flow, but we will also prevent the enormous waste of soil of the country, which is robbing the cultivated areas of vast amounts of fertile, cultivable soil and depositing it in rivers, bays, sounds, and gulfs, where it is not wanted.

The next thing to be considered is artificial reservoirs. The people of Pittsburgh have recently caused to be made a survey of the watersheds of the Allegheny and Monongahela Rivers, and they have found there many large sites that can be utilized for storage purposes. They are seriously studying the question of constructing these reservoirs with a view to avoiding the destructive floods which at present inflict an annual injury upon Pittsburgh; and the year of the great flood of 1907 caused damage in that city alone amounting to from $5,000,000 to $10,000,000.

So it is everywhere. Localities are considering the question of flood destruction and are working at the problem, not only in its local aspects, but in its national aspects. The States at the lower ends of rivers are calling upon the Nation to see to it that they are not damaged by the run-offs from States above them.

[From the Pittsburgh (Pa.) Post, Mar. 16, 1911.]

FOR FLOOD PROTECTION.

The declaration by George H. Maxwell that the enactment of the Newlands bill by Congress will add fifty to a hundred millions to the value of property in the Pittsburgh industrial district has aroused an increased interest on the subject of flood protection. The Newlands bill was introduced in the United States Senate by Senator Newlands of Nevada, and it provides for an annual appropriation of $50,000,000 for 10 years to regulate and control the flow of navigable rivers in aid of interstate commerce and as a means to provide for flood protection.

This act, Mr. Maxwell declares, will afford Pittsburgh the protection desired, and by proving a guaranty of safety would result in a tremendous enhancement of values. Mr. Maxwell, as the executive director of the flood commission, has made a thorough study of conditions, and his statement must be accepted as wholly devoid of extravagance. It serves to show what the flood menace inflicts in the way of business losses and depreciation in the value of the affected real estate.

The flood commission has made commendable progress in the preparation of plans, but it is stated both State and National aid will be required. The Newlands bill, owing to the broadness of its scope, is recognized as the best legislation that has been advanced. It covers every State in the Union. A bill is also pending in the legislature which authorizes county commissioners to expend moneys for flood protection.

Naturally the citizens of Pittsburgh will await with keen interest for the development of this all-important matter. It means much to them, both as to business and comfort. With the positive claims that the danger can be overcome, there will be an increased demand for a condition that would be of such incalculable benefit to the city and all its business interests.

[From the Lockport (N. Y.) Sun, Dec. 12, 1911.]

ONE MILLION ACRES IN NEW YORK.

The immediate drainage of the 80,000,000 acres of swamp and overflow land in the United States, the immediate regulation and control of the flood waters of every river in the country, the immediate development of a national policy for the control of the entire drainage-water question as a unit, are the aims of the National Drainage Reclamation Association, just formed in Chicago of men from the South, Southeast, East, Southwest, Middle West, and far West.

To this end the new association will get behind the bill introduced in the Senate by Senator Newlands providing for the regulation and control of all rivers and streams, storing their flood waters, and distributing them in times of low water.

James R. Garfield, former Secretary of the Interior, and Gifford Pinchot, former Chief Forester and at present the president of the National Conservation Association, were present at the organization meeting. Each spoke at length upon the magnitude of the work the association was about to undertake, and each spoke of the necessity for a strong organization built upon the policy of national patriotism.

As the name of the association indicates, its primary work will be to compel the Federal Government to take immediate steps to reclaim the 80,000,000 acres of swamp and overflow lands that are scattered all over the country. At the same time it will give its aid and support to every other conservative movement—to forestry, irrigation, river regulation. The word " reclamation " in the name indicates the comprehensiveness of the aims of the association.

" We want to reclaim these 80,000,000 acres of swamp lands," said Edmund T. Perkins, of Chicago, who called the meeting. " We want to add to the permanent wealth of the country five or eight billion dollars' worth of land and hundreds of millions of dollars to the value of the annual crops from our lands. We want Uncle Sam to do this for the sake of all this people—to provide more homes for his nephews and nieces, to increase the prosperity of the land, to decrease the high cost of living.

" Because every section of the land has swamp acres, this is not and can not be a sectional movement. There are nearly 14,000,000 swamp acres in the States immediately surrounding Chicago—in Illinois, Iowa, Minnesota, Wisconsin, and Michigan. There are more than a million such acres in New York and New Jersey; there are nearly 3,000,000 such acres in California and Oregon; there are 25,000,000, approximately, along the Atlantic coast; and there are more than 30,000,000 in the Mississippi and Ohio and Missouri Valleys."

[From the Lincoln (Nebr.) Journal, Jan. 19, 1912.]

The Newlands reclamation bill is one of the most comprehensive conservation measures ever placed before Congress. It contemplates devoting $50,000,000 a year for a period of 10 years to the general subject of water control in the United States. It is proposed to unite all of the hydrographic activities of the Government into one harmonious plan. The idea is to impound and store the flood waters of the upper reaches of the rivers for irrigation; to provide channels as the rivers near the sea large enough to carry away floods without damage, and at the same time serve as waterways for commerce. With the plan goes the reclamation of the swamps and the reforestation of the mountains to prevent erosion and check sudden freshets. It is easy to figure a return on this investment running up into the billions of dollars. In general the plan is workable. Of the financial benefits to be derived from it there can be but little question. The main point to guard against is the enhancement of the value of private lands at the expense of all the people. The national irrigation act provided for the return of all the money expended to the Treasury as a result of the enhancement in the value of the lands served by the Government ditches. It would be only just to arrange for the same policy with reference to vast areas of property directly benefited by the Newlands program.

[From the Pueblo (Colo.) Journal, Jan. 19, 1911.]

WATERWAY IMPROVEMENT.

The proposal of Senator Newlands to make a thorough investigation of the inland waterways of the country has merit which ought to insure its passage by Congress. Under his plan every use to which water can be put will be considered; the rivers will be examined as to their possibilities for freight carrying and power purposes; practical plans will be formed for improvements and estimates of the cost made. It is a big undertaking, which will require the expenditure of considerable money for the preliminary work, but the expense will be small in comparison to the good to be accomplished. Accurate facts will be secured and the Government enabled to go about the work of waterway improvement in a systematic manner, and not in the haphazard way which is of so frequent occurrence. Under the " pork-barrel " methods which have existed immense sums have been voted in the past for " improvements " which were of no account, the only good thing about them being that employment was furnished.

A feature about the Newlands measure which can be objected to is that for the appointment of a special board to consider the matter of improvements. A salary is provided for the members, and as their task will take a number of years, the expenditure on this item alone would be considerable. There must be some supervising board to direct the work, but one could be secured without any additional salary expense. The Government has plenty of engineers and experts in its employ, and these could be detailed to make the investigation. The Army engineers and the experts connected with the Interior Department are well fitted for the task, and with substituting a board composed of such the Newlands bill would be the ideal method for getting at a businesslike handling of the waterway problem.

[From the Woman's National Daily, St. Louis, Mo., Jan. 27, 1911.]

ESCHEWING PORK.

Senator Newlands has offered an amendment to the river and harbor bill providing for the appointment of a board to consider all questions of inland waterways, irrigation, swamp-land drainage, and forest preservation in its relation to the streams. This is not a general conservation commission, but one charged with the consideration of all the phases of inland navigation. It would be the province of this board to study all the projects, harmonize and coordinate them, and make recommendations to Congress for specific action. This is something the friends of waterways have long demanded. It is the proper way to cut the " pork barrel " from appropriation bills, and therefore should receive the approval of the President. It is the way to harmonize the various projects and get all their friends to pulling together for such of them as the board considers desirable and practicable.

Having expended half a billion on the Panama Canal, as we shall have done by the time it is put into operation, particularly if we erect elaborate fortifications, and then add largely to the Navy to protect the fortifications, as we should be compelled to do, we could well afford to expend a like sum upon a properly devised system of waterways for the development of internal transportation. We have expended hundreds of millions in the past with comparatively little to show for it. We shall continue to waste money in the same way, pork or no pork, unless we systematize the work as Senator Newlands provides for in this bill, or in some other way involving the same general principle. The amendment will probably not carry in the brief time Congress has yet to consider it. Indeed, it may be the means, by delay caused by its discussion, of preventing the bill itself from passing, and thus adding one more to the calls for a special session. But soon or later it will be passed, because it appeals to the business sense of the people.

[From the Gulf States Farmer, New Orleans, March, 1912.]

COOPERATION IS THE WATCHWORD OF THE NATIONAL DRAINAGE CONGRESS.

The object of the Second National Drainage Congress, to be held in New Orleans on April 10–13, 1912, will be to work out a national policy for river regulation and control, for protection from overflow, for flood prevention, and for land reclamation by the irrigation of arid lands and the drainage of swamp and overflow lands, that will harmonize and unite every section of the United States in a great campaign for its adoption by the National Government.

This national policy must be one that will bring into complete cooperation and harmony the National Government, the States, and all local districts and municipalities in actual constructive work.

It must be a policy that will clearly recognize the constitutional limitations of the National Government and require of the National Government that it shall do only such things as are clearly within those constitutional limitations and for which precedents already exist in legislation heretofore enacted.

It must be a policy which will unite in its support the Ohio River Valley, which requires flood prevention, as well as navigation; the upper Mississippi River Valley, which requires a sufficient enlargement of the reservoir system on the headwaters of the Mississippi River to regulate the river flow for navigation and for water-power development; and the Missouri River Valley, which requires storage reservoirs and flood-water canals for irrigation, navigation, protection from overflow, flood prevention, and water-power development.

The precedents already exist for the doing of all these things by the National Government, but its work through the different bureaus, services, and departments lacks cooperation, and is for that reason inadequate and wasteful.

In the lower Mississippi Valley, if the National Government will protect the banks, prevent caving and the destruction in that way of existing leeves, preserve and maintain the navigable channels, construct adequate outlets and controlling works, and build the large canals necessary for navigation and as part of a comprehensive drainage system, the rest of the work of the reclamation of the swamp and overflow lands will be accomplished through State, district, and local action.

In the State of Louisiana the recent decision of the State supreme court sustaining the constitutionality and validity of drainage bonds issued under State statutes provides the way for securing the capital necessary for the local drainage work, and it is neither desirable nor necessary that this work should be undertaken by the National Government, even though it were within its constitutional power.

It will thus be seen that the object of the National Drainage Congress will not be to strike out any new and radical national policy, but its slogan will be "Cooperation and harmony." It will aim to bring into cooperation, coordination, and harmonious and united constructive work all the agencies which are now at work in an inadequate and disconnected way.

It is in this work of bringing order out of chaos, eliminating controversy, and perfecting a broad working plan which will unite territorially the entire Mississippi Valley from Canada to the Gulf of Mexico, with the Ohio River Valley on the east and the Missouri River Valley on the west—a vast region embracing more than one-third of the entire area of the United States—that the National Drainage Congress so much needs the cooperation by attendance as a delegate at its meeting in New Orleans on April 10–13 of everyone who would be benefited by the development of the Mississippi Valley.

Those who contribute to the success of this great movement for uniting so many heretofore divergent ideas and plans in one great workable whole that will solve the problem of navigation, drainage, protection from overflow, and flood prevention in the lower Mississippi Valley, and at the same time apply to similar conditions anywhere in the United States, will help to do the country a service as great as any which can be rendered to it in any way in this generation. The problem is so vast and far-reaching in its importance and magnitude that it overshadows every other public question. It dwarfs into comparative unimportance even the Panama Canal.

In the State of Louisiana alone there are 10,000,000 acres of land that can be reclaimed for agriculture by drainage, protection from overflow, and flood prevention. Louisiana is larger by 10,000 square miles than the combined area of Belgium, Holland, and Denmark, has greater latent agricultural resources, and will sustain a larger population than those countries. Their combined population is now 16,000,000, while that of Louisiana is only 1,600,000. The annual agricultural production of Louisiana to-day is $85,000,000. If its 10,000,000 acres of reclaimable land were drained and cultivated it would increase the agricultural production of the State over a billion dollars—more than twice the entire gold production of the world. And these stupendous figures show the possibility of development by river regulation and land reclamation in only one State.

If the western boundary line of Mississippi were extended south to the Gulf of Mexico, that part of Louisiana lying to the east of that line would embrace an area as large as Belgium. If the unreclaimed lands in that territory which are now an uninhabited waste were drained and intensively cultivated, as are the lands of Belgium, by a densely settled rural people, there would be within a radius of 100 miles of New Orleans a population as large as that of Belgium.

The population of Belgium is 7,200,000. What would that mean to New Orleans? It would mean that it would rival Antwerp, the third great seaport of the world, in its commercial prestige and world trade; while Baton Rouge would grow to be as great and beautiful a city as Brussels.

Every smaller city, town, village, and hamlet in the whole Mississippi Valley and Gulf States would grow and develop proportionately in population. Every merchant, wholesale or retail—every manufacturer—every professional man, engineer, lawyer, doctor, or dentist—every real estate owner—every planter, farmer, fruit grower, or truck gardener, would be correspondingly benefited. All would share in the enormous prosperity that would be created by this stupendous development of wealth from natural resources.

[From the Gulf States Farmer, April, 1912.]

THE NATION-WIDE NEWLANDS PLAN—SENATOR NEWLANDS'S BILL BEFORE CONGRESS TO AID DRAINAGE—ITS WIDE SCOPE.

Four billion dollars more in farm products each year; this sum added annually to the wealth in the United States for the prosperity of its farmers, merchants, manufacturers, railroads, and bankers and their employees; this is the result of a national business investment under consideration in this Congress. It is proposed in the bill for river regulation drawn by Senator Newlands and known as the Newlands bill.

Four billion dollars per annum in perpetuity from the investment by Uncle Sam of $50,000,000 a year for 10 years—$500,000,000.

The Newlands bill has a scope big enough to perform as a harmonious whole the big tasks to which the Government has set its hand.

The bill is considered one of the broadest and most comprehensive conservation measures ever drafted. By coupling all the work proposed by it with the idea of promoting interstate commerce by means of navigable rivers its brings within the constitutional limitations of the Federal Government such tasks as the drainage and reclamation of swamp lands, the irrigation of arid and semiarid lands, the protection of forests, the elimination of dangers from floods, etc.

The Newlands bill has received the enthusiastic indorsement of many public men and associations. It was indorsed unqualifiedly at the nineteenth meeting of the National Irrigation Congress held recently in Chicago. It is being earnestly supported by the Pittsburgh Food Commission. It has just been indorsed by Edmund Perkins, president, and Isham Randolph, vice president, of the American Reclamation Federation, at the annual meeting in Chicago. It has the support of most of the members of the National Drainage Congress, organized in Chicago last month, and probably will be officially indorsed by that organization at its second meeting, in New Orleans, April 10 to 13.

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DECLARED CONSTITUTIONAL.

Many expert constitutional lawyers have pronounced the bill constitutional. They say this is about the only way in which the National Government can undertake such work as drainage and reclamation of swamp lands, irrigation works, forest preservation.

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Edmund T. Perkins, of Chicago, vice president and acting president of the National Drainage Congress, who was the engineer of the Reclamation Service for several years, is an ardent supporter of the Newlands bill. "It is such a splendid constructive measure, and with such far-reaching beneficial effects to the entire country, that it ought to be passed immediately," he said. "It is all that the irrigation advocates could want, all that the drainage enthusiasts could wish for, all that the forest men could desire; it provides for the conservation of the water, forest, and soil resources of the whole country."

George H. Maxwell, director of the Pittsburgh flood commission, is more enthusiastic even than Mr. Perkins. Mr. Maxwell is a member of the executive committee from Pennsylvania of the National Drainage Congress. "The Newlands bill," says Mr. Maxwell, "unites every aspect of conservation in a comprehensive plan that can be carried out by the Federal Government for the benefit of the whole Nation; and does it in what I consider the only constitutional way such a work can be done—under the policy of aiding interstate navigation and controlling, regulating, and standardizing the flow of navigable rivers."

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[From the Spectator, Pittsburgh, Friday, Apr. 7, 1911.]

FLOOD COMMISSION'S GREAT WORK.

Mr. George H. Maxwell, executive director of the flood commission of Pittsburgh, writes as follows to the Spectator:

"Is not $100,000,000 added to the value of property in the Pittsburgh industrial district a proposition large enough to merit the active and vigorous cooperation of every business man in the district? The figure I give is the conservative estimate of the benefits that would immediately result if the Pittsburgh industrial district were safeguarded against floods. That would be done, beyond all question or peradventure of doubt, if the Newlands river-regulation bill were enacted into a law by Congress."

The bill which Senator Newlands has before the Senate at Washington has attracted a great deal of favorable attention and provides for the construction by the Federal Government of storage reservoirs and irrigation works wherever necessary to furnish water not only for irrigation puposes but for the prevention of devastating floods.

It is this latter purpose that is specially applicable to the Pittsburgh district, for with the Newlands bill made a law the work of constructing great reservoirs at the headwaters of the Allegheny and Monongahela Rivers could be carried on, with the splendid and profitable result of ending the costly ravages to Pittsburgh and suburbs by great floods.

Such a proposition should receive the prompt, hearty, and generous support of business men and all other citizens of Pittsburgh. Certainly the adding of $100,000,000 to the value of property in our industrial district is a grand thing, and yet to attain it nothing is really needed but the support of the people.

In this great work the Pittsburgh Chamber of Commerce is taking an active, aggressive, and splendidly efficient part. Let its work be backed up by the influence and the financial support of business men and all people of the Pittsburgh district. The chamber of commerce flood commission was originally organized with 34 business and professional men, and is now being enlarged to include representation of the various industrial, commercial, and manufacturing interests.

[From the Fresno Morning Republican, Sunday, Apr. 7, 1912.]

CONTROL OF FLOOD WATERS.

EDITOR REPUBLICAN: We have noticed very recently accounts of the old and often-repeated story that Pittsburgh is flooded again; and this week the old, old story comes again that the Missouri, La Platte, and the Mississippi Rivers are raging torrents and doing millions of dollars of damage to the people in their vicinity. We may not this year have such reports of the Kings, San Joaquin, and Sacramento Rivers, but under usual conditions we shall hear of such things in future years; we had it last year and will again. Because of these ever-recurring floods Pittsburgh some time ago raised $100,000 to make surveys and estimates to store the flood waters that do so much damage (we might say annually to their city), and out of a large number of sites fōr reservoirs we understand they have selected 17 of the most favored ones, and that if these are built the flooding of Pittsburgh will be a thing of the past, and the flood waters that do so much damage will be made a useful servant of the people. And Pittsburgh is preparing, if in the event they can not get the Government to aid them in this work, to go on and do it alone. As Pittsburgh in the past has been one of the most favored cities in the country to receive benefits through the Government's protective policy, they have good grounds to continue to plead for aid from their point of view on this matter. One of their Congressmen has a bill now before Congress for a large appropriation to help in this work. Of course, if it became a law it would be a local matter, yet of great benefit to a large section of country. But if Congress would pass Senator Newlands's river-regulation bill, known as S. 122, which appropriates $50,000,000 a year for 10 years. It would become a national affair, and as this bill provides for cooperation with States, counties, and even small districts, for the benefit of the people all over, wherever they take enough interest in such work to do something to help themselves. This great constructive measure should become a law at the earliest possible moment.

Some people say it is well enough to appropriate the money, but where is it to come from without more taxation of the people? We answer, let the Government stop building battleships costing about $15,000,000 each before they are ready to leave our shores on a peaceful mission, for we have no wars on our lands and not the slightest prospect of one; yet some of the "chair warmers" at Washington want to-day to spend $20,000,000 on a single battleship, and they want one or two of this kind every year. These "chair warmers" are men on duty keeping their seats warm and imagining all kinds of disasters are going to come upon us as a nation if we do not keep building these engines of destruction. Congress now being in session, we hear from these infant industrial "chair warmers" that we are in danger again of the Japanese invading us, which is all "bosh and rot" to many of our great and notable men. It is time the people wake up to the enormous expenditure that our Government is spending every year preparing to kill people and only giving a paltry few dollars in helping the "mainstay" of the Government, to wit, agriculture. It is well to remember that 70 cents out of every dollar collected by the Government every year is spent in paying for past wars and preparing for future ones that will never come. This leaves 30 cents for all the rest of the work. We constantly hear of the high cost of living, and if the same policy is carried on as in the past we will hear more of it.

We need more land under cultivation, and we have it here at home if the Government only turns its attention to it. We have 80,000,000 acres of swamp and overflow land made so by these ever-recurring floods, and nearly every acre of these lands could be made a garden spot for our people to live on in peace and plenty. It must be reclaimed, and it will be as soon as our people wake up to its advantages and its great possibilities.

The great national drainage congress that will be held in New Orleads the coming week will be one of the largest congresses ever held in this country, and we have no doubt it will speak in no uncertain words a demand that our Government does take notice that in this great work a substantial start shall be made and that at once in the work to reclaim these vast areas of the richest lands on the face of the globe. In a short space of time our Government will have an abundance of material and machinery on hand when the Panama Canal is completed, and this could be brought home and put to good use in this reclamation work, in preparing these lands for homes, and it must be done.

We are glad that Mr. Frank Short is going to that drainage congress, sent by the Panama fair commission; by this we know that our State will be heard from. The writer of this communication holds credentials from the head officers of the drainage congress, but it takes more than credentials to go so far to attend, no matter what the great object of the gathering may be. We are positive, knowing some of the leading men of this congress, that Senator Newland's bill, S. 122, will be strongly indorsed by that congress, and this we know every county board of supervisors and every chamber of cemmerce, board of trade—in fact, every organization of every description in this State and other States—should pass strong resolutions indorsing the Newlands river-regulation bill, and every resolution should be sent to every Congressman and every Senator at Washington and a private note that this measure must be passed and become a law this session of the Congress. If this were done we could be in line for assistance, not only of drainage but of irrigation—what our west side so much needs.

JOHN FAIRWEATHER.

[From the Courier Journal, Louisville, Ky., Apr. 7, 1912.]

CONTROL OF FLOODS.

It is evident that the levee system along the Mississippi River, while a great protection in the case of ordinary high water, is a source of no small danger in times of extraordinary floods.

Many years ago, when an engineer of some note suggested a system of storage reservoirs for controlling floods and also for increasing river stages at seasons of low water, he was almost laughed out of court. His plan was regarded as visionary and impractical, and nobody gave it very serious attention. The engineer long ago passed to his last account, but the idea has survived, and there is pending in the United States Senate a bill, offered by Senator Newlands, which bears the following title:

"A bill to create a board of river regulation and to provide a fund for the regulation and control of the flow of navigable rivers in aid of interstate commerce, and as a means to that end to provide for flood prevention and protection and for the beneficial use of flood waters and for water storage, and for the protection of watersheds from deundation and erosion and from forest fires, and for the cooperation of Government services and bureaus with each other and with States municipilities, and other local agencies."

A few years ago the Chamber of Commerce of Pittsburgh organized a flood commission to investigate the question of flood control and make a report thereon. The commission delved deeply into the subject, and finally recommended storage reservoirs as a means of flood prevention. As reasons for indorsing the reservoir plan it cited the following:

"The flood relief would be extended over hundreds of miles of tributaries and of the main rivers, including the Ohio, for many miles below Pittsburgh.

"The impounded flood water, with proper manipulation of the reservoir system, would considerably increase the low-water flow of the tributaries and of the main rivers.

"This increased low-water flow would greatly aid navigation and interstate commerce.

"The increased low-water flow would notably improve the quality of the water for domestic and industrial purposes.

"The sewerage problem of Pittsburgh and of many other communities along the rivers would be simplified.

"The public health would be protected against the dangers arising from the insanitary conditions caused by overflow and by extreme low water.

"A considerable amount of water power would be incidentally developed."

The commission found that there were many available sites for reservoirs in the vicinity of Pittsburgh. In fact, it selected 43 such sites, and had most of them surveyed. The opinion was expressed that adequate flood reduction at Pittsburgh could be obtained with 17 reservoirs, and the estimate was made that these reservoirs could be constructed at a cost of $20,000,000. In 10 years the flood damage at Pittsburgh has aggregated more than half this amount. The area affected by floods in the city includes real estate of the assessed valuation of $160,000,000. If relieved from the flood menace, it is believed this property would be increased in value at least $50,000,000, or more than twice the cost of a system of reservoirs. The commission believes it would be the part of wisdom for the city to build the reservoirs.

The National Drainage Congress is to meet in New Orleans April 10 to 13. Considering present conditions along the Mississippi River, the congress is likely to devote considerable attention to the question of flood prevention. A discussion of the reservoir plan which seems to be so strongly favored by Senator Newlands and the Pittsburgh flood commission would add much to the interest of the convention.

[From the Chronicle Telegraph, Pittsburgh, Pa., Apr. 8, 1912.]

FLOOD PREVENTION.

Senator Newlands of Nevada, in taking up the cudgles in behalf of the Pittsburgh flood commission's plan of flood prevention, directs attention to the inadequacy of unrelated improvement projects, such as channel dredging and levee protection. If we are to prevent disastrous floods and make the rivers serve their proper function of waterway navigation, he contends each river must be treated as a unit from source to mouth and treated in a scientific and orderly manner. This is the view enunciated by President Taft in his speeches and recommendations relative to river improvement, and it is in accordance with this view that the President has advised the taking up of the improvement of the Ohio as a starter and the prosecution of this work in a logical way until the problem of securing all-the-year-round navigation has been solved. To the idea so advanced in its general aspect no serious objection is raised in any quarter. The vital difficulty is to interest Congress in operations requiring so large an expenditure as the proposed improvement entails. While the present economy spasm lasts the prospects are not encouraging. Sooner or later, however, Congress must concede the public necessity that exists and provide the means of meeting it, in so far as Federal obligation goes.

[From the Terre Haute (Ind.) Tribune, Apr. 8, 1912.]

ANNUAL WASTE.

Annual and semiannual repetitions of floods such as are devastating the Mississippi, Ohio, and Missouri Valleys, causing the loss of many lives and damage to property that will probably total more than $50,000,000 would be prevented by the passage of Senator Newland's " river-regulation " bill now pending in Congress. This is the statement of Frank B. Knight, member for Illinois of the executive committee of National Drainage Congress.

The Newlands bill would place the task of regulating the navigable waters—treating them all as parts of a unified, comprehensive system—in the hands of a commission. It provides for the storage of the flood waters in natural and artificial reservoirs, to hold them back until times of drought, when they can be let loose and maintain the navigable rivers at a proper depth. The reforestation of the watersheds is only one of the methods contemplated by the bill for checking the floods. Others are the construction of artificial reservoirs where these are possible and practicable, and the full utilization of natural reservoirs. It provides for carrying the surplus waters out over the arid and semiarid districts, in irrigating operations, to let it seep back gradually through the soil. It provides for the digging of drainage channels to carry off the surplus waters from the lower reaches of the river, to help keep the navigable channels at a standard depth and prevent them from being shifting; also to utilize these drainage channels as additional waterways.

It provides also for the construction of dikes and levees. The levee system is a good thing and has accomplished a great deal to protect people and property and to reclaim overflowed lands. But this work has been done by piecemeal; the various sections are unrelated. In times of unusual conditions, as at present, the entire levee system is endangered because the work of controlling the rivers has not been started at the headwaters and among the tributaries.

[From the Pittsburgh (Pa.) Post, Apr. 9, 1912.]

THE MISSISSIPPI FLOOD.

The flood in the Mississippi River must be regarded as a national calamity. More than 30,000 persons have been driven from their homes, a number not yet fully calculated drowned, while the monetary loss will exceed $10,000,000. Inasmuch as the end is not yet, these figures will probably be greatly exceeded, as many communities heretofore prosperous are in danger of being wiped out of existence.

These floods, with their attendant disasters, will continue just as long as scientific means are not adopted for keeping them under control. The present disaster proves the inadequacy of the levee system.

Senator Newlands, who is to address the Pittsburgh flood commission next week, favors a system of river government that will not be piecemeal. He believes that each river must be treated as a unit from source to mouth in order to guarantee the perfection of the precautions taken for the safety of the people. It is evident, however, that if the Mississippi Valley is to be spared repetitions of these disasters a form of levee must be developed that will not break. This would involve a tremendous cost, but it would be warranted when we take into consideration the millions that are swept away by the floods, the loss to business, and the suffering imposed on the people. It is a problem that calls for the most careful scientific research.

[From the Nashville (Tenn.) Banner, Apr. 9, 1912.]

DEEP WATERWAYS.

Senator Newlands, one of the distinguished men the Commercial Congress has brought to Nashville, is intereseted in the improvement of waterways and points out that the present floods emphasize the necessity for that great work. He was quoted in the Banner's news columns yesterday as saying:

"In order to accomplish anything in this direction, we must undertake the work in a big way—just as we did the Panama Canal and the irrigation works. We must appropriate at least $50,000,000 annually for 10 years and tell our engineers and constructors to 'plan big.'"

Senator Newlands, though now representing one of the States in the far West, is a native of Mississippi. He therefore knows something of the great river, whose unruly waters are now devastating the adjacent lands, and of the possibilities that would come of its control.

Senator Newlands is right in placing waterway improvement on a parity of importance with such great public works undertaken by the Government as the Panama Canal and the irrigation of arid lands. The work should be undertaken on a big scale with a view to great accomplishment.

The improvement of the Mississippi River and its tributaries will be made the more pressing by the completion of the Panama Canal. All the vast valley will need the deep waterway to send its exports to the nearest port of shipment.

Deep waterway is a matter in which the South—that portion west of the Blue Ridge Mountains at least—has a vital interest. Senator Newlands should have the strong support of this region in what he proposes. And it is not a matter for the South alone, but for the whole Mississippi Valley, and that is a very considerable portion of the country.

[From the Lynchburg (Va.) News, Apr. 10, 1912.]

THE RIVER PROBLEM.

The great flood in the Mississippi and its affluents is attracting public attention to one of the greatest problems confronting the American people. The Mississippi drains the central part of the United States, a region of wonderful fertility, already densely inhabited and destined to support a much larger population in the near future. The recurring floods bring danger to life and destruction to property throughout the great Mississippi Valley. It is estimated that the present overflow has cost the lives of 30 persons and destroyed property to the value of $10,000,000. How can such disasters be averted? How can the mighty river be controlled? That is the problem that the people of this country must endeavor to solve. It is a problem of greater magnitude than the construction of the Panama Canal, and its solution may involve a greater outlay. The people of Holland have protected their country against the North Sea by the construction of dikes. The original cost was enormous, and many thousands of dollars are expended every year in protecting and repairing the dikes on which the salvation of the country depends. The floods of the Mississippi are even more unmanageable than the waves of the North Sea. The best engineering skill of the age will be taxed to the utmost to devise means for restraining the angry waters. The sediment brought down by the floods has already raised the bed of the river above the level of the adjacent land. Whenever a break occurs in the levee the waters rush through and cover an immense area of fertile land. The Egyptians thousands of years ago attempted to control the Nile by constructing great reservoirs or lakes to hold back a part of the flood. The British are doing something of the same kind now by building the Aswan Dam. These examples may give a hint to our engineers. This subject came under discussion on Monday in the Southern Commercial Congress. Senator Newlands made some very wise suggestions, which were published in this paper on yesterday, but their importance justifies their reproduction here.

Senator Newlands advocated the appropriation of at least $50,000,000 a year for 10 years by the General Government to dam the great rivers and store their flood waters in such a manner as to prevent freshets and afford a constant flow of water throughout the year.

"The Mississippi flood," he said, "accentuates the agitation for big action regarding our waterways. The full regulation of our rivers can never be secured by mere channel dredging and levee protection. The whole river must be treated from source to mouth, including all its tributaries, by preventing swift run-off of the storm waters through storage and diversion of flood waters, both natural and artificial.

"We must undertake the work in a big way—just as we did the Panama Canal and the irrigation works."

Senator Newlands is on the right road. Of course, his plan means the outlay of an enormous amount of money, but the object to be attained justifies the outlay. No nation was ever before called on to undertake a work of such magnitude. But this Republic is to-day the richest country in the world, and it can afford the outlay. Then, too, it must be remembered that the benefits of the work, if properly done, will not be confined to the present generation, but will continue to bless those who come after us indefinitely, and it must not be forgotten that the saving of the loss of $10,000,000 a year, to say nothing of the loss of life as a human sacrifice, will furnish a motive for Government liberality in this matter which must command the general approval of the American people.

[From the Evening Star, Newark, N. J., Apr. 11, 1912.]

A NATIONAL PLAN OF FLOOD PREVENTION.

There is an object lesson for the National Drainage Congress at New Orleans on the need of an intelligent national waterways policy in this week's tremendous flood in the Mississippi Valley. Local devices to confine the mighty torrents have proven their feebleness. Senator Newlands, of Nevada, shows that each river, with its sources and tributaries, must be treated as a unit, so that the surplus water can be held back in storage and used to irrigate arid lands and furnish power. Thus we shall harness one of the mighty forces of nature and make it man's profitable servant instead of his destructive foe. Senator Newlands goes so far as to place this problem above the construction of the Panama Canal, and he argues that if it costs the Nation $50,000,000 a year for the next decade the money will be wisely and profitably spent. He urges that the scientific skill of the Nation and the States be enlisted in comprehensive plans of storage, irrigation, drainage, and flood prevention, embracing the 15 arid and the 15 swamp-land States.

[From the Trenton (N. J.) True American, Apr. 11, 1912.]

TO PREVENT FLOODS.

Flood devastation along the Mississippi, Missouri, and Ohio Valleys has been greater in some localities than ever before, but when it is known that the damage annually from floods throughout the country totals $100,000,000 the news of the present rampages will not create surprise. While Senator Newlands's river-regulation bill now pending in Congress aims to prevent this great damage annually the cost of the reform would reach sums that would appear almost prohibitive., Senator Newlands would put a commission in charge of the rivers, construct reservoirs for the storing of the water, establish a system of reforestation, build levees, dig drainage canals, and in other ways endeavor to prevent the great overflows that bring distress and death. Expense should not be a deterrent when it provides a remedy for an evil as great as this. Taking into consideration the loss of life, the damage to property, the deprivations of those who inhabit the valleys, and the soil erosion, the proposition of Senator Newlands might in the end prove an economy.

[From the Columbus (Ohio) Dispatch, Apr. 11, 1912.]

TO CONTROL THE FLOODS.

Senator Newlands believes in checking the floods of spring, and, besides having a practical plan, has the courage to advocate for this purpose the expenditure of $500,000,000—$50,000,000 bonds a year for a decade. It has been amply demonstrated, he declares, that channel improvement alone is a failure, that dikes can not be built high enough or strong enough to confine the waters to their natural channel. It is time to turn to something else, and that is, he believes, the construction of reservoirs into which the surplus water may be turned and from which it may be taken for the purpose of irrigating the dry lands and for making power, a universal need in the industry of the country.

Anticipating the objection that there is not money for this enterprise, the Senator holds up to ridicule the nation that has not money enough for its necessary constructive work, and suggests the taxation of wealth by inheritance, corporation, employment, and other similar taxes. Whatever the result of this propaganda, it is timely, for there is even now before the country the spectacle of the destruction of property and life by the floods in the great rivers. That it is not only a tremendous loss of property and business activity, but also an enormous waste of energy, needs no demonstration. The only possible argument is as to the course to be adopted to prevent the loss and to conserve and employ the energy. The Senator's estimate that the control of the floods overshadows in importance the construction of the Panama Canal invites credence.

[From the Nashville (Tenn.) Banner, Apr. 12, 1912.]

RIVER IMPROVEMENT.

Senator Newlands's idea that appropriations for river improvement should be a lump sum and the work directed in systematic manner in lieu of the present "pork-barrel" process, with local specifications, is one that deserves attention.

A great deal of money has been spent in river improvements that is of only partial benefit, because other parts of the river are left unimproved. According to the Newlands idea the Government should complete the improvement of all rivers throughout their navigable length. That is a commendable idea and suggests a plan that would be a great improvement on the piecemeal, patchwork plan of river improvement that has been so long ineffectively pursued.

The waterways of the country are of great value to internal commerce, and ought to be improved to the highest possible point, making unobstructed navigation possible. Under the present system of river improvement everything is left to the enterprise of interested localities in securing special appropriations. The work is done in spots and without any connected system. Years are spent before anything substantial is accomplished, and then the lack of continuous improvement throughout the whole length of the stream renders local improvements of little avail. Some sort of reform in the method of river improvement is sorely needed, and the Newlands idea seems to be a good one.

[From the Shreveport (La.) Times, Apr. 12, 1912.]

PLEDGES NOT FULFILLED.

Senator Newlands hails from the arid West, and therefore is not immediately concerned about the floods in the Mississippi Valley or about waterways and how they should be treated in order to make them serve the country's welfare. Nevertheless, Senator Newlands has ideas on the subject, and he has not been slow to express them. He makes the charge that both political parties have failed to keep their pledges with respect to waterway improvement.

Senator Newlands left Washington last Sunday on a speech-making trip to agitate the adoption of a constructive policy for the development of waterways. He spoke before the Southern Commercial Congress at Nashville Monday and was scheduled to address the National Drainage Congress yesterday in New Orleans. From New Orleans he will go to Pittsburgh to speak at a dinner given by the Pittsburgh Flood Commission.

"The present floods demonstrate forcibly the substantial foundation for the agitation for large action as to our waterways," said Senator Newlands before leaving Washington. "Our rivers can never be regulated properly by unrelated projects for their improvement, such as by channel dredging and levee protection. If we are ever to prevent these disastrous floods and make the rivers serve their proper function of waterway navigation, each river must be treated as a unit from source to mouth and developed in a scientific manner. I shall urge the different associations which I address to appear immediately at

Washington and demand from both political parties the performance of their platform pledges with respect to waterways. These platforms called for the cooperation of the scientific services of the Government, for cooperation between the Nation and the States, and for big continuing appropriations for the development of our waterways under comprehensive plans."

This idea has been indorsed in its essential principles by President Taft, when Secretary of War, and it is under legislation of this character that the Panama Canal and the national irrigation works have been so successfully prosecuted.

[From the Goldfield (Nev.) Tribune, Apr. 12, 1912.]

NEWLANDS'S PLAN APPROVED.

Out in this arid country reports from the flooded districts of the South have scarcely more than passing interest. Nevertheless a Nevada man is at the head of the waterways commission which has had under advisement for years plans for ameliorating conditions along the Mississippi, Missouri, and Ohio Rivers and their tributaries during the annually recurring floods.

Senator Francis Newlands has a bill pending in Congress which has been approved by the National Drainage Congress now in session at New Orleans. It is estimated that the damage from these floods during normal seasons amounts to at least $100,000,000 annually. This year the loss will be infinitely greater, and the destruction of life and property will mark an epoch in national history. The Newlands proposed legislation bill provides for an outlay of $50,000,000 a year for a period of 10 years. This would be employed in the construction of levees, retaining walls, and reservoirs to impound surplus flood waters for use later in the year when the waterways are almost useless for want of a supply to keep their sluggish channels clear of obstructons. The Chicago Post, in treating the subject, outlines the plan as follows: It is proposed to treat the navigable streams as units from their sources to their mouths. Under the constitutional clause giving the United States Government exclusive jurisdiction over navigable waters Congress has the right to control, regulate, and standardize the streams. Under the public-health clause the Government is compelled to protect its citizens from floods and disease resulting from floods. The Newlands bill provides for carrying the surplus waters out over the arid and semiarid districts in irrigation projects, to let it seep back gradually through the soil. It provides also for a uniform system of levees which has heretofore been done piecemeal without any correlation of effort or design. At present the entire levee system is endangered, because the work of controlling the rivers has not been started at the headwaters and among the tributaries. The Newlands bill has been indorsed all over the country, including the Irrigation Congress, the Pittsburgh Flood Commission, and numerous boards of trade and chambers of commerce.

[From the Providence Tribune, Apr. 13, 1912.]

THE RIVER FLOOD PROBLEM.

At the meeting of the National Drainage Congress in New Orleans the other day Senator Newlands very truly said that the most vital function of that body is to bring order out of chaos, reconcile differences, eliminate controversies, and perfect a working plan broad enough to unite the entire Mississippi Valley. It has been demonstrated that the attempt to regulate rivers by channel improvement alone is a mistake; the proper way is to decrease the flood and raise the ebb and thus secure a stable flow of water. To do this it is necessary to treat each river as a unit, including its source and tributaries, with a view to storing and holding back the floods and utilizing the flood waters in the irrigation of arid lands and the development of water power, coupled with the construction of canals for drainage.

This work is not incomparable in importance with the construction of the Panama Canal. It would be tremendously expensive, but if it were done under comprehensive plans and with cooperation between the Federal and the State Governments the development of each use for the surface water would lessen the cost of maintaining a channel for navigation and would help to make practicable improvements the cost of which would otherwise be prohibitory. In the State of Louisiana alone it is said that there are 10,000,000 acres of rich agricultural land that can be reclaimed by drainage, protection from overflow, and flood prevention.

Every section of the Mississippi Valley is interested in some feature of the problem, and the object desired is to combine all elements into harmonious, concerted effort for the common good. To that end the skill of the various scientific services of the Nation and States should be united. Comprehensive plans should be prepared under their direction, embracing the 15 arid States and the 15 swamp-land States. The work might be organized under the supervision of the Engineer Corps of the Army in much the same way as the Panama Canal service.

"Let us candidly admit," said Senator Newlands, "that during the next 10 years the work will cost $500,000,000, and provide a continuous appropriation of $50,000,000 annually in the firm faith that the money will be well invested. Once we unite in the support of such a policy the Ohio River Valley, with its need of flood protection; the upper Mississippi Valley, which requires the construction of reservoirs for the storage of water for navigation and for the control of floods; the Missouri River Valley, with similar needs; and the lower Mississippi Valley, with its need of drainage and flood protection; then it will be found that the National Congress will respond to the demand as it never has and never will respond to the demand for fitful and ineffective work by projects."

The pledges of both parties in 1908 as to waterway development have not been fulfilled, and the disastrous occurrences of the last two weeks should induce the people to express to Congress their emphatic opinion that it is time for both parties to redeem these pledges, instead of merely renewing them two months hence for campaign purposes. The excuse that the revenues do not warrant the expenditure can no longer be accepted. If the Government has not enough money to provide for this great construction work, then there must be created more revenue by additional taxes levied on the wealth of the country in the form of inheritance taxes, corporation taxes, or occupation taxes, based on income. It would be an outrage, of course, to increase the taxes on consumption, from which nearly the entire revenue of the Federal Government is now derived; but there is no reason why the wealth of the country should not respond in some form to the obligations of the Government to exercise fully the power conferred upon it in the interest of the whole people.

[From the Reno (Nev.) Journal, Apr. 15, 1912.]

PROGRESSING.

It is one of the inexplicable things of nature that while one section of the country is flooded and damaged in the millions by too much water another is suffering to the same extent for lack of water. Possibly it is not entirely a natural phenomenon, so far as floods are concerned, for these seem to have a pretty close relation to the cutting off of the timber resources of this country; but whether it is natural or artificial it is apparent that the conditions may be greatly mitigated and ameliorated by both public and private action.

Senator Newlands's address in Nashville is peculiarly timely in the present flood emergency. His remarks appear to have a value and application not before so clearly seen. His theories are not mere academic ones, but have a practical import that can be readily brought down to that great measure of dollars and cents.

The Nevada Senator has persisted in the ideas of irrigation and reclamation for many years. He has had little encouragement from parties engaged in the perpetual bickering and puttering of partisan politics, but it is some comfort to know that the time is approaching when the country may expect to realize the practical results of his work.

[From the Santa Ana (Cal.) Blade, Apr. 16, 1912.]

TO PREVENT FLOODS.

Annual and semiannual repetitions of floods such as are devastating the Mississippi, Ohio, and Missouri Valleys, causing the loss of many live and damage to property that will probably total more than $50,000,000, would be prevented by the passage of Senator Francis Newlands's river-regulation bill, now pending in Congress. This is the statement of Frank B. Knight, consulting engineer, of Chicago, member for Illinois of the executive committee of the National Drainage Congress. Before leaving for New Orleans to attend the second meeting of that organization, April 10 to 13, Mr. Knight declared that the United States Government will be in the position of neglecting a plain duty until it protects its citizens from such destructive internal foes as floods and the disease that results from them.

"The damage to property from floods amounts to at least $100,000,000 a year," he said. "The Newlands river-regulation bill provides a method of preventing floods at a cost of but $50,000,000 a year for 10 years. An editorial in the Chicago Post on the present situation says: 'Aside from the old question of saving the trees on the watershed so that the spring floods will be slower in running off, the only thing to be done is to keep on in the present course. More levees and higher levees will have to be built until the Mississippi is thoroughly harnessed.

"The Newlands bill provides for an additional method. It proposes to treat the navigable streams of the country as units from their sources to their mouths. Under the constitutional clause giving the United States Government executive jurisdiction over navigable waters, Congress has the right to control, regulate, and standardize the streams. Under the public-health clause of the Constitution it is the duty of the Government to protect its citizens from these internal foes, floods and diseases resulting from floods.

"The Newlands bill would place the task of regulating the navigable waters—treating them all as parts of a unified, comprehensive system—in the hands of a commission. It provides for the storage of the flood waters in natural and artificial reservoirs, to hold them back until times of drought, when they can be let loose and maintain the navigable rivers at a proper depth. The reforestation of the watersheds is only one of the methods contemplated by the bill for checking the floods. Others are the construction of artificial reservoirs where these are possible and practicable, and the full utilization of natural reservoirs. It provides for carrying the surplus waters out over the arid and semiarid districts, in irrigation operation, to let it seep back gradually through the soil. It provides for the digging of drainage channels to carry off the surplus waters from the lower reaches of the river, to help keep the navigable channels at a standard depth and prevent them from being shifting, also to utilize these drainage channels as additional waterways.

"It provides, also, for the construction of dikes and levees. The levee system is a good thing and has accomplished a great deal to protect people and property and to reclaim overflowed lands. But this work has been done by piecemeal; the various sections are unrelated. In time of unusual conditions, as at present, the entire levee system is endangered because the work of controlling the rivers has not been started at the headwaters and among the tributaries.

"These floods occur and recur year after year. We can expect them to continue. We have the means, the ability, and the power to stop them. And it would be economy to do so. It would be economy even without considering the enormous waste of soil fertility caused by each flood.

"The people of Illinois, as well as those of the other Central States, are awake to the necessity of controlling the rivers. The existence of some 600 drainage and levee districts in Illinois shows that. But all flood prevention and drainage work needs to be brought under one comprehensive system."

The Newlands bill has been indorsed by a number of organizations all over the country, including the National Irrigation Congress, the Illinois Association of Drainage and Levee Districts, the Pittsburgh Flood Commission, and many boards of trade and chambers of commerce.

It will probably be indorsed by the National Drainage Congress at New Orleans.

[From the Ithaca (N. Y.) Journal, Apr. 16, 1912.]

CHECK THE FLOODS.

Day after day the public has been reading of the destructive floods in the Mississippi Valley until to nearly everyone has occurred the question whether something could not be done to prevent their recurrence year after year as has been the experience in the past.

Reforestation, of course, is the first suggestion for checking the enormous damage that is done by the high water. There is no denying that planting trees in the headwaters of the Mississippi would do a great deal to hold back the water.

Deepening the channel of the river is another suggestion that would help some, but the relief that it affords is only temporary, as the stream gradually carries back as much as is taken out. Dredging, if kept up, of course, will materially help to improve the situation. But neither of these methods would be sufficient.

What is needed is a series of dams in connection with an improved system of levees, together with the two foregoing suggestions. That would solve the problem and put an end to the frightful annual loss of life and property.

Storage dams would not only hold back the water in times of floods, but they could be used in connection with a system of irrigation that would make theem a profitable investment. In the rivers that flow into the Mississippi no doubt they could be made to develop light and power.

Senator Newlands, in an address before the National Drainage Congress at New Orleans last week, declared that the problem of preventing the floods in the Mississippi Valley overshadowed in importance the construction of the Panama Canal; and so it does.

It would be tremendously expensive, yet if there were cooperation between the Federal Government and the various States affected the work could be carried to a successful completion. In the State of Louisiana alone there are 10,000,000 acres of rich agricultural land that could be reclaimed in connection with a proper system of handling the Mississippi's waters.

[From the Pittsburgh (Pa.) Chronicle Telegraph, Apr. 17, 1912.]

WATERWAY LEGISLATION.

Speaking at the banquet of the chamber of commerce and the flood commission last night, Senator Newlands, of Nevada, extended assurances of ultimate cooperation by Congress in the work of flood prevention which are full of encouragement. Mr. Newlands admits that as it is Congress lags behind in this respect, public opinion in regard to the need of a logical system of flood prevention and river improvement being far in advance of congressional action. He holds, however, that it rests only with the public bodies interested in the solution of the problems in questions to inspire adequate action at Washington. This, in his judgment, may be brought about by uniting upon some cooperative measure, full and comprehensive in its nature, as a substitute for the piecemeal system at present prevailing. Should a measure of this character be prepared and urged with due earnestness, Congress would be certain to respond. There is sound sense in the counsel thus given, and it is to be commended accordingly to the notice of the various river and harbor associations, waterway associations, and flood-prevention associations that are working, each on its own lines, in the various regions affected.

[From the Christian Science Monitor, Boston, Mass., Thursday, Apr. 18, 1912.]

LEVEES AND FLOODS.

As one of the Representatives in Congress of the State of Louisiana, Joseph E. Ransdell has for years been among the foremost and ablest advocates of waterway improvements in the Mississippi Valley. As United States Senator elect from the same State it may reasonably be expected that after March 4 next his devotion to the cause for which he has so long and so faithfully contended will be continued and his usefulness to it increased. The other day in the National Drainage Congress at New Orleans he made an eloquent plea in behalf of the levee system of the lower Mississippi. According to one of the local newspapers, he directed attention to the vast benefit the levee system had been to the protection of fertile lands from overflow, and urged that the congress should insist upon stronger and higher levees and the greatest possible energy in improving and protecting those embankments.

Nobody even in the most superficial way acquainted with conditions along the lower Mississippi and its immediate tributaries will undertake to controvert Mr. Ransdell's testimonial to the service rendered by the levees in the past, but in the light of conditions that are even now present throughout a large section of the low country and in the Delta, is it not opportune to question the value of these barriers? Have they not failed repeatedly in times of mergency? Are they not failing now as safeguards of the plantation and reclaimed areas?

Owing to the topography of the country through which they flow, the lower Mississippi and its immediate tributaries must always be held within levees or artificial banks. This goes without saying; but would it not be a much wiser plan for the States subject to river floods and inundations to give hereafter less attention to effect and more to cause?

The levees would not need to be so strong or so high, they would not need to be constructed with regard to so much power of resistance, if the strain upon them was diminished. Under ordinary pressure the levees should and would stand for years with little repair. Subject, as they are now, to the full force of the flood tide, crevasses are common, and the losses resulting from levee destruction alone, to say nothing of consequential damages, are enormous.

It is to be sincerely hoped that Senator-elect Ransdell and his southern colleagues will unite with the middle western and northwestern delegations in Congress in a comprehensive movement for the storage of flood waters and the prevention of floods. Floods can be prevented at the headwaters and along the courses of the Mississippi and its tributaries by diversion of the surplus flow of the spring freshets into reservoirs much more effectually than by attempting to confine the vast cumulative volume after it has entered the main artery. How futile are the levee embankments has been all too apparent during the last two weeks. Has not the time come when men like Senator-elect Ransdell should look to remedying the trouble at the root rather than in the branch?

[From the Courier Journal, Louisville, Ky., Apr. 19, 1912.]

THE FLOW OF THE OHIO.

Senator Newland's bill to create a board of river regulation, with a view to flood prevention, has as one of its objects the building of storage reservoirs. The Newlands bill is a measure which provides for the cooperation of the National Government with States, municipalities, counties, and districts in flood protection, drainage, reclamation, forest preservation, and a multitude of other things. It would appropriate $50,000,000 a year for 10 years for these purposes. As it is receiving some indorsements from influential sources, the opinion of the Geological Survey as to the feasibility of reservoirs along the Ohio is worthy of note.

[From the Ogden (Utah) Examiner, Apr. 19, 1912.]

PEACE AND THE TREASURY.

In a recent address delivered by Senator Newlands before the National Drainage Congress in New Orleans the frank statement was made that the one solution of the problem of big rivers was to appropriate $500,000,000 at once, and then a continuing provision of fifty millions a year indefinitely.

It looks like a tremendous amount of money. Possibly the Nation would gasp at such a mighty appropriation.

But the United States is less startled at a like expenditure for war. Of course, it is wise to be prepared against the possible attack of a foreign power. But out of the resources provided by the people there certainly should be an expenditure sufficient to prevent a recurrence of such flood horrors as this year has known.

The Treasury ought to be regarded as available for the uses of peace quite as much as for the demands of war. It is a bad commentary on the wisdom of the lawmakers if a preventable flood can waste millions of dollars in property and scores of lives. It is an equally bad commentary when the desert waits to bloom because there is no money left after providing for the Army and Navy—and that for a cultivated Nation and in a time of peace.

[From the Salt Lake City (Utah) Tribune, Apr. 22, 1912.]

TO CURB THE FLOODS.

In view of the destructive floods in the Mississippi River and its great tributaries, the present is considered by Senator Newlands, of Nevada, as an opportune time to inquire into the feasibility of controlling the surplus waters of the Mississippi Valley by way of storing them at their height and releasing them later on when the water is low, in order to help navigation. Accordingly he has introduced a bill to provide a board and a fund "for the regulation and control of the flow of navigable rivers in aid of interstate commerce, and as a means to that end to provide for flood prevention and protection, and for the beneficial use of flood waters, and for water storage, and for the protection of watersheds from denudation and erosion and from forest fires, and for the cooperation of Government services and bureaus with each other and with States, municipalities, and other local agencies."

He has also introduced another bill making an appropriation of $8,000,000 for the relief of the present sufferers by the floods along the Mississippi and its tributaries.

Referring to the matter of controlling the flood waters of the Mississippi Valley, the task is generally referred to in the eastern papers as one not impossible, but impracticable by reason of its assumed great cost. And yet the losses every year by the floods amount to millions of dollars. How many years would it take to have these losses aggregate as much as the cost of the work of flood prevention? We do not believe that it would be necessary to take very many years in order to make the accounts balance.

Taking the Ohio River to begin with, the floods are heavy and destructive every year. Occasionally the destruction amounts to very large figures, and the computation of those who have studied this question is that the losses of one generation would fully provide means for protecting all coming generations from destruction by floods in that river. The valleys of the tributary streams of the Ohio are long, usually quite narrow, but in all of them are good sites for dams and space for large reservoirs. It would cost a good deal of money to do the work, nor should the task of controlling all of the river floods of the Mississippi Valley be begun at once, for so little would be done in any one place that it would hardly count for anything. But if the work should be begun on the headwaters of the Ohio River, and extended to the main tributaries of that river, there can be little done but that the whole flood situation there could be controlled at an expense that would not be extraordinary when compared with the annual losses that the floods inflict. Senator Newlands's bill to set on foot the preliminaries by way of inquiring into the feasibility of such control is a good one, and now is a good time to pass it.

[From the Cincinnati (Ohio) Enquirer, Apr. 26, 1912.]

CONSTRUCTIVE LEGISLATION.

When a broad, well-considered, far-reaching, constructive measure is brought forward it is entitled to careful notice and consideration. It is well known that the methods of dealing with the great Mississippi floods have been spasmodic without sufficient general plan of continuity and wholly inadequate to control the constantly recurring disasters which they cause.

In order to meet the problem and at the same time to provide economically and scientifically for universal control and utilization of flood waters, Senator Newlands introduced a bill for river regulation which has as yet received no consideration, but the principles of which have been approved in the platforms of both parties. Speaking to an amendment to the river and harbor bill, Senator Newlands said:

"This question has been taken up in great detail by the Irrigation Congress, whose problems relate to the mountain regions above tributary to the Mississippi River, and by the Drainage Congress, whose problems relate to the reclamation of swamp lands in the Mississippi Valley below; and they, in connection with the other waterway associations of the country interested in waterway development as a matter of navigation, have substantially agreed that the best way, the full and comprrehensive way, of taking hold of the question of river development for purposes of navigation, to which the Federal jurisdiction attaches, is by regarding the river with all its tributaries as a unit; regarding the Mississippi River, with its tributaries of the Ohio, the Tennessee, and the Cumberland on the east, and with its tributaries of the Missouri, the Platte, and the Arkansas on the west, as a unit; requiring cooperative treatment upon the part of both the Nation and the State, the Nation being interested in developing these rivers for transportation, the States and the Nation both being interested in the development of the waste land of the country, whether it be the arid land above or the swamp land below, and also in the development of that great natural resource, the water power of the country, for the purpose of hydroelectric expansion.

"Suggestion is made that through a system of cooperation of the great scientific services of the country full and comprehensive plans can be made covering all these various forms of development, and also covering such an apportionment of costs and of benefits as will assign to the different sovereignties certain portions of the cost, just as they receive certain proportions of the benefit."

That would be genuinely constructive legislation, with no politics in it, and of very great benefit to the whole country, and Congress, even though it be a campaign year, ought to spare the time to take it up and pass it. The country would appreciate attention to the real wants and interests of the people along such lines.

[From the Salt Lake City Tribune, May 3, 1912.]

Senator Newlands, of Nevada, has taken a comprehensive view of the destructive floods in the Mississippi Valley which have impelled the Government to send large measures of relief and to spend great sums of money in feeding the homeless and distressed. He has brought forward in the Senate a proposition to provide what is called "a river-regulation fund" of $50,000,000 annually for a period of 10 years after the completion of the Panama Canal and an annual expenditure of $5,000,000 in the intermediate years. This he proposes as an amendment to the river and harbor bill offered by himself. The plan contemplates the control at the headwaters as well as at the lower branches of the troubled rivers of the Mississippi Valley system. The Senator claims that his measure not only would prevent destructive floods in all of the great watersheds of the country, but would provide for the use of flood waters on arid lands, for swamp-land reclamation, and for the development of water power. One-fifth of the money appropriated is to be spent on the lower Mississippi and one-tenth each on Atlantic coast rivers, Gulf rivers, exclusive of the Mississippi, the upper Mississippi, the Ohio, the Missouri, the Sacramento and San Joaquin, and the Columbia and Snake Rivers, and the remaining tenth in connecting the Great Lakes with the Ohio and Mississippi. The cooperation of the great hydraulic engineers of the country with the Engineer Corps of the Army is invoked, they to work under the supervision of the river-regulation board which is provided by the measure, and the cooperation of this board with States and municipalities is provided for.

The scheme is as broad as the country, and its great merit is that it will bring to bear upon the mighty question of handling the surplus waters of the United States the best scientific and practical knowledge in the country as well as the unlimited resources of the National Treasury in the solution of the question. It is a vast proposition, comprehensive as to all the river systems, and as beneficial as it is inclusive.

There is no question about the practicability of the operations proposed by Senator Newlands. The great deterrent is the vastness of the labor required; but since the engineering skill of the country is equal to the task, and since the resources of the National Treasury, applied as they would be generally throughout the country, are sufficient to meet the cost of solving the problem, there seems to be no reason to doubt the practicability of the Newlands program. The idea has been suggested by many heretofore, but there has been no concrete proposal in Congress to move for the solution of the great question in a practical way until now. Mr. Newlands now comes forward with this practical proposition, involving a cost altogether of $500,000,000. We believe that this cost would go very far to settling the whole question; perhaps it would be ample for all the work.

The problem is to control the flood waters, store them at favorable locations in the valleys of the tributaries of the great streams, and release these stored waters later on when they would be beneficial to navigation. On the lower Mississippi River the great problem is to strengthen the banks and to prevent their being washed away. This can be done by proper piling and riprapping work, which the hydraulic engineers fully understand, and work which they have already said will be ample for the purpose.

The proposition of Senator Newlands is both statesmanlike and eminently practical. It is, perhaps, too much to expect that the average Member of Congress will rise to the full comprehension and necessity of meeting the difficulties as Senator Newlands proposes to meet them, but we can not doubt that eventually this matter will be taken up substantially on the lines marked out by him, and that the country will show that it is able to handle its river systems as well as the ancients in Egypt, Chaldea, and Assyria were able to handle the great rivers of their countries. To allow such vast destruction by floods and such impediments to navigation as annually intervene is a reproach to the skill and practical ability of the American people, and it can not be supposed that this reproach will be allowed to lie upon us forever.

[From the New Orleans (La.) Item, May 3, 1912.]

SOUTHERN VOTES WILL DO IT.

The Newlands bill provides the only radical and permanent remedy for such floods as now threaten so great an area of the Mississippi Valley and its tributaries or have already wreaked loss upon thousands of helpless people.

We are told, upon what we believe to be reliable authority, that the success of the Newlands bill in Congress now depends upon the southern vote. The West will support it. The Pittsburgh flood commission, representing important and influential interests near the headwaters of the Ohio, has indorsed it and has already outlined for its own section a comprehensive plan for checking flood at its source. The southern vote is needed, and the southern vote, so we are told, will put this great measure through Congress.

New Orleans approves the Newlands bill. The Progressive Union indorsed it on Thursday. It is of vital importance, not only to Louisiana, not only to the Mississippi Valley, but to every State whose rivers flow into the Mississippi and to every State which has any large area in need of drainage or any large area in need of irrigation; for the bill provides for a general plan of Federal river protection, conservation, drainage, and irrigation, which should serve to check floods at their source, to hold the surplus water in great reservoirs to relieve the rivers and always offer a supply of water for dry lands, to deepen rivers for navigation, and to drain millions of acres of wet lands.

The present flood has demonstrated two things conclusively: First, that the river problem is a national problem; second, that the building of levees alone is not enough for real protection.

The Mississippi Valley is the drain vent of half the United States, and lower Louisiana is the outlet for the rest of the Mississippi Valley as well.

Other parts of the country, however, also suffer from flood, and the selfish interest of other States dictates a policy of cooperation with us in preventing floods.

But a higher duty calls them. They owe to us, who bear the brunt of the burden, their vigorous help in our demand that the Federal Government tackle the problem at its source, stop the deforestation which yearly permits greater floods to gather in mass, and hold back the swollen spring freshets until the lower rivers have worked off their own surplus and offer a safe channel to the sea.

To a great extent, however, our relief from the danger which annually threatens us lies in our own hands.

The Newlands bill offers the best plan thus far suggested, and southern votes can pass it.

Now is the time for the South to unite in solid support of it. The whole counttry is awake to the importance of the work, and the sympathy of all the people is with us.

Now is the time to mold a new national policy of river protection while public sentiment is softened to receive the impression.

[From Times-Democrat, May 5, 1912.]

FEDERAL CONTROL OF LEVEES.

The suggestion that the United States Government take charge of the levees of the Mississippi River, now being discussed in the press and by public men in Congress and elsewhere, is by no means a new proposition, says Mr. W. O. Hart, of the Louisiana Historical Society, for 30 years ago President Chester A. Arthur sent a message to Congress, giving it as his opinion that the action of the Federal Government in taking charge of the levees should no longer be delayed, no matter how much it would cost. Unfortunately, the country at that time was in the grasp of partisan politics, and the matter was not followed up, though the press at the time considered the matter of great benefit and importance to the people.

MESSAGE OF PRESIDENT ARTHUR.

The message of President Arthur is well worth reading at this time, and is as follows:

EXECUTIVE MANSION, *April 17, 1882.*

To the Senate and House of Representatives:

I transmit herewith a letter dated the 29th ultimo, from the Secretary of War, inclosing a communication from the Mississippi River Commission, in which the commission recommends that an appropriation may be made of $1.010.000 for "closing existing gaps in levees" in addition to the like sum for which an estimate has already been submitted.

The subject is one of such importance that I deem it proper to recommend early and favorable consideration of the recommendations of the commission. Having possession of and jurisdiction over the river, Congress, with a view of improving its navigation and protecting the people of the valley from floods, has for years caused surveys of the river to be made for the purpose of acquiring knowledge of the laws that control it and of its phenomena. By act approved June 28, 1879, the Mississippi River Commission was created, composed of able engineers. Section 4 of the act provides that—

"It shall be the duty of said commission to take into consideration and mature such plan or plans and estimates as will correct, permanently locate, and deepen the channel and protect the banks of the Mississippi River; improve and give safety and ease to the navigation thereof; prevent destructive floods; promote and facilitate commerce, trade, and the postal service."

The constitutionality of a law making appropriations in aid of these objects can not be questioned. While the report of the commission submitted and the plans proposed for the river's improvement seem justified as well on scientific principles as by experience and the approval of the people most interested, I desire to leave it to the judgment of Congress to decide upon the best plan for the permanent and complete improvement of the navigation of the river and for the protection of the valley.

SHOULD PROTECT MISSISSIPPI VALLEY.

The immense losses and widespread suffering of the people dwelling near the river induce me to urge upon Congress the propriety of not only making an appropriation to close the gaps of the levees occasioned by the recent floods, as recommended by the commission, but that Congress should inaugurate measures for the permanent improvement of the navigation of the river and security of the valley. It may be that such a system of improvement would, as it progressed, require the appropriation of twenty or thirty millions of dollars. Even such an expenditure, extending, as it must, over several years, can not be regarded as extravagant, in view of the immense interest involved. The safe and convenient navigation of the Mississippi is a matter of concern to all sections of the country, but to the Northwest, with its immense harvests, needing cheap transportation to the sea, and to the inhabitants of the river valley, whose lives and property depend upon the proper construction of the safeguards which protect them from the floods, it is of vital importance that a well-matured and comprehensive plan for improvement should be put into operation with as little delay as possible. The cotton product of the region subject to the devastating floods is a source of wealth to the Nation and of great importance in keeping the balances of the trade in our favor.

It may not be inopportune to mention that this Government has imposed and collected some $70,000,000 by a tax on cotton, in the production of which the population of the lower Mississippi is largely engaged, and it does not seem inequitable to return a portion of this tax to those who contributed it, particularly as such an action will also result in an important gain to the country at large, and especially so to the great and rich States of the Northwest and the Mississippi Valley.

CHESTER A. ARTHUR.

[From the Taunton (Mass.) News and Bay City (Mich.) Tribune, May 8, 1912.]

REGULATION OF THE BIG RIVER.

The needs of 200,000 persons made homeless and destitute by floods will be urged as ample reason for the preventive measure of Senator Newlands in his recent amendment to the rivers and harbors bill, appropriating $5,000,000 a year for the control and regulation of the Mississippi River and its tributaries, and $50,000,000 a year after the completion of the Panama Canal. It is the contention of the advocates of this measure that if it is passed and put into effect the Mississippi and tributaries can be controlled, and the Government may not again be called upon to feed and care for thousands of victims of the action of the rivers, as in the present case. This amendment is substantially the resolution adopted by the National Drainage Congress at New Orleans April 12. First Vice President Edmund T. Perkins, of Chicago, is cooperating with President David R. Francis, of St. Louis, of the congress; Vice President E. J. Watson, of Columbia, S. C.; Vice President Barnard Baker, of Maryland; and Vice President Edward Wisner, of New Orleans, in the work of getting a large and strong delegation from all parts of the country to urge the passage of this or similar legislation in the interests of humanity and to prevent the repetition of the appalling flood destruction of life and property of the last two months.

[From the New York Press, May 12, 1912.]

URGES RIVER REGULATION—LOUISIANA MAN SAYS FLOOD WATERS FROM OTHER STATES CAUSE TROUBLE.

That it is "the duty of the National Government, by a broad and sane system of conservation at the headwaters, such as is contemplated in the Newlands river-regulation bill," to protect Louisiana from the flood waters of 30 other States is contended in a telegram sent yesterday to the New York Chamber of Commerce by M. B. Trezevant, secretary of the New Orleans flood-relief committee and the New Orleans Progressive Union.

The message points out that the floods at present sweeping parts of Louisiana come from almost two-thirds of the States of the Union, and asks why Louisiana should spend millions of dollars annually to guard herself from such trouble. Speaking for the citizens of New Orleans, the message says:

"We earnestly urge the citizens of the United States, and particularly the newspapers, to give us the only outside aid we ask—that is, discredence of false and alarming stories and support of the Newlands river-regulation bill, which will harness the floods and force them to serve instead of to destroy."

Louisiana, Trezevant says, has spent $50,000,000 out of the public treasury, and private individuals and railroads millions more, for levee protection since the Civil War. The city of New Orleans has been unaffected by the Mississippi Valley floods, and resentment is shown by the residents at reports that the city has been in danger. No levees in 100 miles of the city have broken, and engineers of the city, State and national, agree New Orleans is not menaced by the torrents.

[From the New York Sun, May 12, 1912.]

NO FEAR FOR NEW ORLEANS—BUT THE CITY WOULD LIKE AID IN PASSING THE NEWLANDS BILL.

The following dispatch from M. B. Trezevant, secretary of the New Orleans flood-relief committee and the New Orleans Progressive Union, was received yesterday by the chamber of commerce:

"The city of New Orleans is absolutely unaffected by the floods in the Mississippi Valley, though a number of parishes of the State of Louisiana have been inundated and the floods have therefore wrought great damage outside of the city. New Orleans is herself alleviating distress with contributions of money, clothing, and bedding, and the Government with rations, and the State militia aiding in rescue work. No levees within 100 miles of New Orleans have been broken and all stories that the city is under water are the wildest sort of irresponsible canards.

"The United States, the State, and city engineers agree that New Orleans will safely pass through the crisis and that the worst is now over. The greatest damage is the farmers' loss of opportunity to make crops, and we are now working out a play to begin the reconstruction of our agricultural districts affected as soon as the waters recede.

"New Orleans, because of its peculiar defensive strength, is the safest city in the Mississippi, Ohio, or Missouri Valleys, despite the fact that Louisiana must protect herself from the flood waters of some 30 other States. This should be the duty of the National Government by a broad and sane system of conservation at the headwaters, such as is contemplated in the Newlands river-regulation bill.

"Why should Louisiana spend millions of dollars annually to protect herself from the waters which come from nearly two-thirds of the Union? Louisiana has spent $50,000,000 out of the public treasury, and private individuals and railroads millions more, for levee protection since the Civil War. We earnestly urge the citizens of the United States, and particularly the newspapers, to give us the only outside aid we ask—that is, discredence of false and alarmist stories and support of the Newlands river-regulation bill, which will harness the floods and force them to serve instead of to destroy."

[From the New Orleans (La.) Picayune, May 17, 1912.]

CYPRESS MEN FAVOR GOVERNMENT LEVEE BUILDING, INDORSING NEWLANDS BILL.

The Southern Cypress Manufacturers' Association adopted the following resolutions:

"*Resolved*, That the Federal Government should immediately extend such temporary relief as may be necessary to repair the broken levees; and, further, should absolutely take over the work of constructing future levees, including revetments, and otherwise protecting the lower Mississippi Valley from overflow.

"*Resolved further*, That the Southern Cypress Manufacturers' Association hereby indorses and approves the resolution of the Pittsburgh Chamber of Commerce, adopted April 13, 1911, indorsing Senator Newlands's river-regulation bill, and urges its passage by Congress."

[From the News-Scimitar, Memphis, May 18, 1912.]

URGES SUPPORT OF NEWLANDS BILL.

George H. Maxwell, leading national authority on drainage and regulation work, addressed the City Club Saturday. He urged the club to support the Newlands bill, now pending in Congress, providing for a board of river regulation to control the flow of navigable rivers and to provide flood prevention and protection. Mr. Maxwell declared that he had no fight to make on the levee system, but insisted that the levees must be supplemented by headwater control of the Ohio, Missouri, and Mississippi Rivers by storage reservoirs. He said no amount of levee building in itself will afford a guaranty against floods should the waters of the three great streams descend at once from Cairo to the Gulf.

The club, by resolution, went on record as favoring the Newlands bill, and a committee of five will be named to give publicity to the measure.

[From the Racine (Wis.) Times, May 18, 1912.]

MAKING WATERWAYS VALUABLE.

Senator Francis G. Newlands is earnestly advocating the organization of a national board of river regulation, in which shall be coordinated the Engineer Corps, Reclamation Service, Weather Bureau, and Forestry Service, for the purpose of formulating a sensible policy in regard to domestic commerce and the conservation of the national water supply.

The recent Mississippi floods have demonstrated the idiocy of permitting billions of gallons of water to run riot over the fertile lands of the Central West, ruining property and taking lives, and then dumping into the ocean. Three months later these same lands will need water to save the crops, and river steamboats will be lying on sand bars because of the shallowness of the channels.

If the Army engineers could take hold of this problem as they have taken hold of the Panama Canal construction it would not take them long to evolve a plan for utilizing the tremendous water supply which goes to waste every spring in the United States. The river problem would seem to be open to solution. The rainfall for the year, if distributed fairly, would result in a standard flow of the river and its tributaries which would be safe for navigation and attended with no destructive results. But the melting of snows in the Rocky, Allegheny, and Appalachian Mountain systems, together with spring rains, all coming about the same time, create an enormous run-off from an area comprising nearly two-thirds of the United States, and this run-off is emptied into the Gulf through a very narrow space.

The Government must not only increase the annual appropriations for bank revetment and levee projection below, but must arrest the run-off by storage for irrigation and water power.

[From the Houston Chronicle, May 19, 1912.]

A SANE RIVER PLAN AT LAST.

Elsewhere in this day's Chronicle we publish portions of a debate that took place in the United States Senate on May 9, the subject being the need for a larger, more comprehensive, and more intelligent treatment of river control in this country.

Senator Newlands, of Nevada, outlined the problem and urged action on his bill to create a river-control board, enlisting the cooperative efforts of all the national services which are directly or indirectly engaged in this or collateral work, but are not working together and to a common end, as they should be.

It is proposed in Senator Newland's bill to appropriate $500,000,000, to be expended at the rate of $50,000,000 a year for 10 years, in building a system of reservoirs, dams, power plants, channel improvements, etc., which will put an end forever to this country's $250,000,000 annual loss by flood and will transform the cause of this vast loss into a permanent source of great profit.

His bill embodies a plan which has received the indorsement of the National Waterways Congress and of both the Republican and Democratic Parties in national convention. It is a sane plan. It is the first plan ever offered big enough to cover the needs of the situation.

As Senator Williams declared, the doing of this work at a cost of $500,000,000 would be worth ten times as much to the people of the United States as the construction of the Panama Canal at a cost of $400,000,000 will ever be.

All that stands in the way of the adoption of this plan by Congress, as Senator Newlands stated very plainly, is the secret and subtle opposition of the railroads, which dread the competition of an effective system of navigable inland waterways, and the disposition of Members of Congress to scramble for the largest obtainable shares of the "pork" provided by the annual rivers and harbors bill.

The spoils system and the opposition of the private owners of the steam railroads of the country prevent action by Congress on sane lines and condemn the country to the continuance of a policy which wastes millions every year by spending relatively small sums piecemeal instead of doing the whole job and doing it right in the shortest time required for the completion of the work.

The Chronicle assures the Texas Members of Congress that the people of this State will support them loyally, enthusiastically, in every bit of support that they may give to this great plan. Our sister States, Louisiana and Mississippi, are the chief losers through inaction. It is the Nation's problem and the South's sorrow. Surely it is the duty of every southern Representative in either branch of Congress to line up in support of this measure.

[Night letters.]

THE WESTERN UNION TELEGRAPH CO.,
New York, April 11, 1912.

GEORGE H. MAXWELL,
National Drainage Congress, New Orleans, La.:

A large portion of machinery necessary for Government to purchase for construction of Panama Canal, which is now rapidly becoming idle, is especially adapted for dredging and constructing levees, the character of work the Mississippi Valley needs, and which is now so strongly impressed upon the minds of the public through great losses of property and life incurred through recent floods. This machinery, if sold secondhand, would not bring more than junk prices, but the machinery and organization which the Government now has would be of great benefit to all if utilized in protecting, through drainage and levees, the overflowed lands of Mississippi Valley. Through your knowledge of this subject, to which you have given particular attention, you know better than others that opening streams and removing obstructions so as to permit free flow of great volume of water greatly relieves the levees. With such machinery and forces now at command of Government ample dredging and adequate levee work can be done cheaper than ever before, and now is an opportune time to undertake it. Am very sorry, indeed, I could not attend this session of Drainage Congress, but it was absolutely impossible for me to get away.

B. F. YOAKUM.

ST. LOUIS, MO., *April 11, 1912.*

GEORGE H. MAXWELL,
St. Charles Hotel, New Orleans, La.:

People of the upper valley who are prevented by flood from attending Drainage Congress urge you, before adjournment, ask National Congress to transfer fast as possible all available engineers and machinery from Panama Canal to Mississippi River. Situation serious, and must be handled at once by men competent to deal with big problem.

O. M. KILLOUGH,
President St. Francis Levee Board,
Mississippi Valley Drainage Association.

[Republished from Gulf States Farmer, June, 1912.]

FLOOD PREVENTION IN THE LOWER MISSISSIPPI VALLEY—THE LEVEE SYSTEM MUST BE SUPPLEMENTED BY SOURCE STREAM AND HEAD WATER CONTROL, AS PROVIDED FOR IN THE NEWLANDS RIVER REGULATION BILL.

The most important problem before the people of the United States to-day is that of protecting the lower Mississippi River Valley from overflow.

The question is not whether it shall be done; it must be done. The only question is "How shall it be done?"

Two plans are proposed, and the issue before the country is "Which plan shall be adopted?"

The first plan is the "levees only" policy, which proposes a system of stronger and higher levees from St. Louis or Cairo to the Gulf, with revetments and bank protection, but takes no account of the causes for the steadily rising flood plane, which goes higher and higher with each successive great flood, and takes no account of any policy of controlling any part of the floods in the territory of their origin.

The other plan is that embodied in the Newlands river regulation bill, which proposes a system of levees from St. Louis to the Gulf as high and strong as the advocates of the "levees only" policy contemplate, with every possible protection by revetments and bank protective works. But the advocates of the Newlands bill stand squarely upon the fact that no levee system can be built that will permanently protect the lower valley from overflow unless it be supplemented by an additional policy of harnessing and holding back as large a portion of the flood water as possible in the drainage basins of the streams where it originates.

There can be no doubt of the fact that the flood plane at Cairo can be lowered 10 feet on the Ohio River, and as much or more of a reduction made in the level of the floods of the upper Mississippi River and the Missouri River where they join to form the lower Mississippi.

If this had been done before the great flood of 1912, a volume of water equal to that which poured through the crevasses and made reservoirs for itself by overflowing millions of acres of fertile farm lands, would have been held back in the watershed of the tributaries of the Ohio, the upper Mississippi, and the Missouri, and would never have reached the Mississippi River at all.

The result of this would have been such a lowering of the flood plane that the levees would have carried the entire volume of water that reached the Mississippi, the Reelfoot levee would not have been topped, no crevasses would have occurred, no damage would have been done, no lives would have been lost.

That is what would have happened if the Newlands river regulation bill had been passed 10 years ago. It would have prevented losses and damage caused by this great 1912 flood that are estimated to have amounted to over $100,000,000, and some estimates run as high as $250,000,000—one-half of the total amount appropriated by the Newlands bill.

Of course estimates of damage at this time are mere surmise, but there is no possible doubt whatever that the expenditure of the $50,000,000 a year for 10 years appropriated by the Newlands bill would save an annual property loss of more than that from floods alone, without figuring on the benefits from regulating the flow of the rivers for the use of the water for navigation and for all industrial and beneficial uses.

The Newlands river regulation bill contains the following appropriation:

"For the Corps of Engineers, United States Army, for building and maintaining revetments, dikes, walls, levees, embankments, gates, wasteways, by-passes, flood-water canals, restraining dams, impounding basins, and bank protective works for river regulation, and as a means to that end the building of works for reclamation, drainage, and flood protection, and for building reservoirs and artificial lakes and basins for the storage of flood waters to prevent and protect against floods and overflows, erosion of river banks, and breaks in levees, and to regulate the flow of source streams and navigable rivers, and reenforce such flow during drought and low-water periods, and for the operation and maintenance of the same, $24,000,000."

It is proposed to increase this amount to $30,000,000 and to apportion from the entire $50,000,000 annually appropriated by the bill the sum of $10,000,000 to the lower Mississippi River, $10,000,000 to the Missouri River drainage basin, $10,000,000 to the Ohio River drainage basin, $5,000,000 to the upper Mississippi River drainage basin, and $5,000,000 to the Sacramento and San Joaquin Rivers, as urged by the River Regulation Commission of Stockton, Cal.

The Newlands bill expressly provides that the appropriations made by it are to be supplemental to such appropriations as may be made by Congress through the river and harbor bills.

The advocates of the Newlands bill say: "Build levees, but do not stop there. Supplement that safeguard by protecting the watersheds from denudation and erosion; check the rapid run-off and sudden floods caused thereby; harness the floods where they originate and make the levee system safe by reducing the flood volume to such an extent that the levees will always carry it without danger of crevasses or of the flood going over the levees. In other words, plan and build the reservoirs on the headwaters instead of having the river break over the levees and makes reservoirs for itself in the lower valley as it has done."

[From the Agricultural Magazine, St. Anthony Park, St. Paul, Minn.]

CONTROLLING THE GREAT RIVERS.

If organized effort, the union of hertofore conflicting interests, and an inspiring leadership can accomplish it, then the improvement of the great rivers of the Mississippi system along the lines of the broadest statesmanship, the greatest beneficence, and the truest economy seems now for the first time "within sight."

The organized effort is seen in the cooperative work now being done by commercial bodies in the great cities all the way up from New Orleans to Pittsburgh, Duluth, the Twin Cities, and Omaha. The union of diverse interests is illustrated in the fact that the irrigationists, the levee builders, and the men who are working mainly for the development of water transportation have now pooled their issues for a common object. The inspiring leadership is found in the person of George H. Maxwell, the author and chief promoter of the national irrigation act, the magnetic orator, and the apostle of the small farm as against the baronial estate. He kindles a flame of enthusiasm for the project wherever he speaks.

All the organizations, all the forces referred to, are to be represented in a grand "river regulation and flood prevention conference" to be held at New Orleans January 6 and 7, 1913, to voice what is fast becoming a "nation-wide" demand for the passage of the Newlands-Bartholdt river regulation bill.

This bill involves a frank recognition of the principle laid down many years ago by Gen. Haupt—one of the foremost of our Government engineering experts—that the place to begin the work of flood prevention and river improvement is at the headwaters, not on the lower stretches of the river. Hold back the floods by storing in great reservoirs along their higher reaches the extra feet of water constituting "the crest" of the floods, and not only will the rivers no longer overflow the country along the lower levels but the water thus held back will serve to maintain navigation in seasons of "low water." And not only this, but the stored-up water in the reservoirs can be made also to serve at innumerable points the purposes of irrigation and the creation of water power. The cost of levee building will be much reduced. And thus the "water wealth" of our great valley becomes one of the grandest of our material assets, whereas now its waste makes it an annual liability.

Minnesota is one of the States which will share most largely in the benefits sure to flow from the passage of this bill, especially in the establishing of cheap water transportation for the products of the farm. It is an "American," not a partisan measure. It plans a vast expenditure—$50,000,000 a year or more. But in carrying forward the work it is proposed to employ the same engineers and the same "plant" now engaged on the Panama Canal. This is a guaranty of efficiency and economy; therefore it is to be hoped that the people of Minnesota will urge upon their Congressmen an energetic support of the bill.

[From San Francisco (Cal.) Call, June 24, 1912.]

TOUCHES CALIFORNIA IN THREE WAYS.

Among other declarations in the Republican platform the one that most concerns California deals with provision for the prevention of floods. The plank is suggested by the recent devastation of the Mississippi region by overflow, but any plan for the protection of that territory will necessarily involve the provision of similar measures for the prevention of overflow by the rivers of California.

Senator Newlands, of Nevada, has been the chief proponent of the general scheme of legislation for this purpose, and his plan includes provision for the California rivers in proportion to their needs.

This matter of flood prevention has assumed the importance of a great national question, as may be inferred from its inclusion in the Republican platform. Treatment of the whole subject on a comprehensive scale is being urged by organized effort, as may be gathered from the following statement issued on behalf of the Mississippi Valley bodies:

"Harness the source streams. Conserve the freshet waters for dry-season navigation. Draw power from dams and reservoirs. Turn the floods of the upper Missouri out over the dry bench lands. Build strong levees from Cairo to the Gulf that will hold the partially controlled floods in the lower river. And what will be the result?

"The reservoirs will supplement the summer flow and thereby provide at all times an adequate supply of water for the system of locks and dams, so that there will always be a navigable stage in the Ohio on which to float out to tidewater the coal, the iron, the steel, and the manufactured products of that portion of the country, while the power developed will go a long way toward increasing the economy of manufacture.

"In the upper Missouri River country hay will grow on millions of acres of land now devoted to grazing, and the production of cattle that will then thrive on that land will be increased tenfold. In addition, summer seepage will return enough water to the river to supply a navigable stage throughout the dry season."

The reasoning applies with equal force to the Sacramento and San Joaquin Valleys. It is not a question of flood prevention merely, but involves in an important way the promotion of irrigation and the conservation of navigation in the dry season.

In a word, the policy recommended in the platform touches California in three several important ways.

[The Springfield (Ill.) News of July 4, 1912.]

The National Reclamation Association and its allied organizations will ask the Federal Congress in December to pass a bill providing for the construction of a complete system of levees from St. Louis to the Gulf as a first step in preventing the drainage of 30 States overflowing the farms of the Mississippi Valley. * * * It is estimated that the dense population of Louisiana alone will be capable of producing from two to three crops each year on 10,000,000 acres of alluvial prairie, aggregating a billion dollars annually of agricultural wealth, to say nothing of the vast resources that will be conserved by the protection of the millions of acres in the watershed of the Missouri, the Mississippi, and Ohio Rivers, that are to-day being devastated by overflows or impoverished by the erosion of tributary streams at the time of high water.

[From the Times-Democrat.]

NEWLANDS AND RANSDELL PLANS.

NEW ORLEANS, *June 30, 1912.*

To the Editor of the Times-Democrat:

While it is not generally known, it can very easily be learned by anyone reading such essays as those of Judge R. S. Taylor, of the Mississippi River Commission, entitled "The Subjugation of the Mississippi," "Levees, Outlets, and Reservoirs," "The Present Aspect of the Mississippi River Problem," and "An Emergency in the Life of a River," that the ultimate state of the Mississippi River from Cairo to the Gulf would be that of a practically clear-water stream, after its banks had been revetted throughout this stretch, and after its tributaries and upper reaches had been cared for under the operation of such a Nation-wide policy as that contemplated by the present Newlands bill.

Judge Taylor shows what I believe is generally conceded by all the engineers who have had practical experience on the river, that nearly all of the silt carried in suspension by its swift-moving waters comes from the caving of its banks, and not from the mountain side or the farm. He shows that "just as soon as these banks are mattressed, which he estimates would cost about $30 a linear, or about $100,000,000 for the Cairo-to-the-Gulf section, the sand bar, once put out of business by the dredge, would practically be a thing of the past, when not only 14 feet, but probably 20 feet, would represent the shallowest portions of this stretch. Judge Taylor, like Gen. Bixby, Maj. Dabney, and other eminent authorities, while he does not condemn the reservoir system as this may be applied to the headwaters of the Mississippi, assumes, I believe, that no such storage system can ever be practicable in the great watershed of the Ohio River Valley, notwithstanding the Chittenden investigations and those of the Cairo flood commission show that reservoirs on all the tributaries of the Ohio River would reduce that river's flood level at Cairo by at least one-fifth of its maximum.

These distinguished Army engineers seem to all agree that as long as the river carries the amount of silt it does to-day the "outlet" which so many contend would lower the flood level is also impracticable as a means of accomplishing that great desideratum.

But once remove this silt, which even the layman may understand would not only fill up the "outlet," but would gradually also fill up the main river itself, through the slackening of the current which would induce its precipitation, there can be no question but that we could then have all the outlets we would need in order to lower said level, and at every point at least, where a lake or bay or the sea itself could be reached, into which this surplus water could be diverted.

And if this grand transformation of conditions can be accomplished, should it not follow that the amount of its cost should only be measured by the magnitude of its obvious advantages, to say the least? In other words, should $100,000,000 or twice that amount between Cairo and the Gulf stop the consideration of such expenditure for such a purpose for a single minute?

The Newlands bill contemplates the expenditure of $500,000,000, which, if placed in the shape of bonds, when added to the present debt of a country whose wealth is said to be some $120,000,000,000, and whose present debt is only $200,000,000 more than that of the city of New York, could hardly be felt, particularly when the tremendously increased earning capacity of these improved highways of commerce is considered. The question therefore presents itself as to whether the vastly larger amount contemplated by the Newlands bill, which would be expended all over the country, on all of our rivers, would not more likely appeal to the people of the Nation who could probably see the incalculable advantages of connecting our rivers in one grand system than would the smaller sum suggested by Mr. Ransdell, which would be spent mostly in this southern section on the lower Mississippi alone.

PETER S. LAWTON.

The Nashville (Tenn.) Banner of July 8, 1912, prints this editorial comment:

"Estimates of engineers made to the National Reclamation Association of the cost of adequate protection from Mississippi River floods is $500,000,000, and the association is to ask Congress to spend that sum in strengthening the levees and building dams to hold back freshets in the tributaries. That is an enormous expenditure, more money, perhaps, than the Government can find for that purpose, but unless the work is undertaken on some such scale and planned for permanency, the Government will have spent, at the end of a generation, an even larger sum in making repairs and guarding against breaks in time of flood."

The Bangor (Me.) Commercial of July 8, 1912, says:

"The terrible losses of life and property resulting from the Mississippi floods having called the attention of the Nation to the need of steps to prevent or minimize the same, the request of the National Reclamation Association that Congress appropriate $500,000,000 to strengthen levees and build dams for regulating the freshets will not create the smiles that might have greeted such a request in times when the existent danger was not as fully appreciated. The task is no light one nor can it be done in a moment. But the investment is one that must ultimately be made, although the expenditure must, of necessity, be extended over a term of years."

[From the Chicago Tribune, July 12, 1912.]

The delegations in Congress of every Mississippi Valley State, from Pennsylvania to the Rockies, and from Minnesota to Mississippi, should insist that the problem of the Mississippi River system, including all the tributary systems of the Father of Waters, shall be attacked without delay.

Col. Roosevelt already has declared for this great task, and the necessity for a broad solution has never been more apparent than now in the wake of the devastation of 1912. Discussion is general on this topic and public opinion ready to be crystallized.

A compact statement of the situation and its possibilities, written by Mr. Walter Parker, of the Louisiana Reclamation Club, gives one of the best summaries.

"Four hundred million tons of silt, the surface soil, is washed from the lands of the Mississippi watershed into the Gulf of Mexico each and every year," writes Mr. Parker. "This is wast in so far as everybody now living is concerned, and the farmers and landowners of the Ohio and Missouri Valleys are paying the bill. Water enough passes down the Missouri when in flood stage to irrigate 15,000,000 or 20,000,000 acres of the dry plains or bench lands in the upper watershed of that river. More than enough water goes to waste down the Ohio River each flood season to supply dry-season navigation and millions of electrical horsepower units. The same thing is true of the upper Mississippi River."

Here is conservation whose benefits are for the present generation.

"Harness the source streams," urges Mr. Parker. "Conserve the freshet waters for dry-season navigation. Draw power from dams and reservoirs. Turn the floods of the upper Missouri out over the dry bench lands. Build strong levees from Cairo to the Gulf that will hold the partially controlled floods in the lower river. And what will be the result?

"The reservoirs will supplement the summer flow and thereby provide at all times an adequate supply for the system of locks and dams so that there will always be a navigable stage in the Ohio on which to float out to tidewater the coal, the iron, the steel, and the manufactured products of that portion of the country, while the power developed will go a long way toward increasing the economy of manufacture.

"In the upper Missouri River country hay will grow on millions of acres of land now devoted to grazing, and the production of cattle that will then thrive on that land will be increased tenfold. In addition, summer seepage will return enough water to the river to supply a navigable stage throughout the dry season.

"The upper Mississippi will enjoy all-the-year navigation and an abundance of power.

"From Cairo to the Gulf the floods will not then climb anywhere near so high as they have done in the spring of 1912, and with a complete and well-constructed levee system on both sides of the river the farmers and planters will no longer fear crevasses and overflows, and limit their investments for improvements accordingly.

"The silt waste will be checked because no adequate system of flood control can ignore soil erosion. Then the farms of the North and Middle West will not annually lose in fertility, and there will be fewer bars and mud lumps in the lower river to check the flow and obstruct navigation."

No nation has had a greater engineering problem than this, and the hopes of enthusiasts are to be discounted. Yet the problem should be attacked with breadth and foresight, and penny-wise caution or shortsighted fear of expenditure should not prevent careful expert consideration of the tremendous possibilities, to say nothing of the urgent necessities of the improvement.

The Houston (Tex.) Chronicle, of July 15, 1912, says:

"The Louisiana Reclamation Club, affiliated with the National Reclamation Association, advocates Federal action looking to the permanent prevention of floods. The Chronicle unhesitatingly indorses the broad principle of adequate Mississippi flood prevention, because it is necessary to national prosperity."

The Pittsburg Chronicle-Telegraph of Saturday, July 20, 1912, says:

"The tremendous damage caused by recent floods in the Mississippi Valley has moved the Louisiana Reclamation Club to make a strenuous appeal for action by the Federal Government toward the execution of the plans advanced under successive administrations for the prevention of floods and the conversion to useful purposes of the huge surplus of water in the basins of the Mississippi, the Missouri, and the Ohio."

Speaking of the club, Mr. Walter Parker thus summarizes the work of conservation that is deemed possible: "Harness the source streams. Conserve the freshet water for dry-season navigation. Draw power for dams and reservoirs. Turn the floods of the upper Missouri out over the dry bench lands. Build strong levees from Cairo to the Gulf that will hold the partially controlled floods in the lower river.

"Let these measures be taken," Mr. Parker goes on to say, "and the results will include a permanent navigable stage in the Ohio, the fertilization of millions of acres in the upper Missouri River country, all-the-year-round navigation, and abundance of power in the upper Mississippi region, abatement of floods from Cairo to the Gulf, stoppage of the waste of silt, and an ultimate addition to the value of landed investments that will afford manifold compensation for the outlay involved."

"These suggestions and deductions are not new, but they derive special force from the circumstances whereby they are prompted and whereby an ominous lesson has been given to the country. The conservation problem, in its relation to the rivers, is a pressing one, and it is clear that further postponement of action upon it will be a dereliction of national duty."

[From the Cairo Bulletin, Aug. 21, 1912.]

GET BUSY.

There is no city in the United States more vitally affected by floods than Cairo. With the Nation's two greatest rivers passing its doors, the city is doubly menaced every time the rivers rise, and that it has escaped inundation in the past doubtless could have been attributed to the fact that when the Mississippi and Ohio Rivers simultaneously reached the flood crest, relief was obtained through the breaking of levees above or below.

Cairo now plans to spend a half million and possibly more in raising and strengthening its levee system, while a movement is on foot to make the levees between the Ohio's mouth and New Orleans impregnable. What assurance has Cairo that posterity will be protected by the system of levees it is now planning to build?

G. H. Maxwell, executive chairman of the National Reclamation Association, which is fighting "tooth and nail" for the Newlands-Bartholdt river regulation bill, which provides for the expenditure of $500,000,000 in a period of 10 consecutive years for the building of source controls, addressed a joint meeting of the three local organizations Monday night. Less than two dozen members of the three organizations attended. Whether this was due to indifference or lack of knowledge of the importance of Mr. Maxwell's visit are matters of conjecture. However, Mr. Maxwell, who has been making a scientific study of the flood problem for a decade, and who is recognized as an authority, solicited an invitation to return to Cairo at a later date and address a larger meeting. The invitation was not extended Monday night, but it is to be hoped that no time will be lost in arranging for another meeting in the early future.

Men who have been studying the flood situation for years virtually agree that the building of an impregnable levee system would give only temporary relief, inasmuch as the rivers flood, the channels would gradually fill up and necessitate the continual raising and strengthening of the levees until the time would arrive when every flood-menaced city in the Mississippi, Ohio, and Missouri Valleys would be surrounded by levees as high as mountains.

There are others, however, who pooh-pooh this idea, but strange as it may seem, they offer no explanation of the fact that the river beds are ever filling, nor do they offer any solution for the correctness of this condition. The main opposition to the reservoir system advanced by the advocates of impregnable levees is the monstrous cost of construction. Five hundred millions of dollars is a vast sum, we will admit, but it is infinitesimal when compared to the vast losses in the past and losses that must be borne by the people of the valleys in the future unless some action is taken to control the floods at the river sources.

What is $500,000,000 to this great Nation of ours; the Nation that is building the Panama Canal; the Nation that can build $15,000,000 battleships? If the Government is to permit its rivers to overflow the valleys as it has in the past, it will not be long before the total losses will have passed the $500,000,000 mark.

The Mississippi, Ohio, and Missouri Valleys are worth more to the United States than a dozen Panama Canals or a hundred $15,000,000 battleships, and a billion dollars would not be too much to spend to protect the lives and property of the people who live in these sections.

The Newlands-Bartholdt bill does not oppose any other river or levee improvement movements. The people of the valleys can continue to build their levees, and they may need them scores of times before the vast work contemplated in the measure is completed. What is needed for the future is a system of control, and if Cairo is possessed of a particle of good judgment it will lend every effort to the successful passage of the measure.

There is no side-stepping the flood problem. We will have floods so long as man is powerless to prevent the falling of snow and rain. Man can not only control rain and snow after it falls if he will, but can turn it into the arid countries when it is most needed, and also release it at the river sources in such a manner that a navigable channel will be maintained at all seasons of the year.

We urge the local organizations to invite Mr. Maxwell to return to Cairo and deliver a second address. The cause he champions seems to be meritorious, and we desire to know more about it.

[From the Duluth News-Tribune, Sept. 19, 1912.]

THE MISSISSIPPI VALLEY.

The intertrade relations of Minnesota and the rest of the Mississippi Valley are such that the interest and well-being of every part of it are second only in importance to that within our own State limits. The floods of the lower Mississippi this last season caused a loss estimated at from $100,000,000 to $250,000,000. This means that the purchasing power, the investment power, the credit basis, and the property value of that section have been reduced by just that much.

There is that much less of all these forms of financial power and stability; the whole economic structure of the entire valley has been weakened to just that extent. Every part must feel the results of this. There will be that much less support for all the intertrade and commercial relations.

Minnesota wants waterway channels on the Minnesota and upper Mississippi Rivers that will give it connections with the lower valley. This State would have the Government make these channels and maintain them at very large expense.

Why? Because Minnesota believes that such channels would be of enough benefit to the people of this and the other valley States to warrant this expense: that the traffic between these sections is so large that the lower water-carrying rates would justify the initial cost.

If this is true, or largely true; if it is warranted even by probable development rather than present conditions, it proves conclusively that the prosperity of the lower valley and of the upper valley are completely unified.

What is true of Minnesota is the fact as to every other State along the Mississippi, the Missouri, and the Ohio Rivers. All of this tremendous sweep of territory forms the Mississippi Valley, and a loss to one part is a loss to all, a gain to one part is a gain to all, and the interests of every part are woven together in an inseparable whole.

Outside of the motives of patriotism and humanity these are the concrete, the pocketbook reasons that Minnesota should stand with all this vast territory for any definite plan that will certainly prevent the recurrence of floods causing such enormous losses.

The upper and lower valleys have climatic differences that make each the other's market, both by season and by product. The loss of one is instantly the loss of the other; the lessening of the purchasing power of the one instantly acts on the other.

The upper valley can no more afford a $250,000,000 loss to the lower valley than can the lower valley itself. We prove this, as stated, by the very demand for greater and cheaper intertransportation facilities.

It is not, then, for the lower valley alone, but for the entire valley to support a comprehensive and sufficient plan for flood prevention as a national project as essentially national as is the preservation of the Great Lakes as a national highway.

[From the Agricultural Magazine, St. Anthony Park, St. Paul, Minn.]

CONTROLLING THE GREAT RIVERS.

If organized effort, the union of heretofore conflicting interests, and an inspiring leadership can accomplish it, then the improvements of the great rivers of the Mississippi systems along the lines of the broadest statesmanship, the greatest beneficence, and the truest economy seems now for the first time within sight.

The organized effort is seen in the cooperative work now being done by commercial bodies in the great cities all the way up from New Orleans to Pittsburgh, Duluth, the Twin Cities, and Omaha. The union of diverse interests is illustrated in the fact that the irrigationists, the levee builders, and the men who are working mainly for the development of water transportation have now pooled their issues for a common object. The inspiring leadership is found in the person of George H. Maxwell, the author and chief promoter of the national irrigation act, the magnetic orator, and the apostle of the small farm as against the baronial estate. He kindles a flame of enthusiasm for the project wherever he speaks.

All the organizations, all the forces referred to, are to be represented in a grand river-regulation and flood-prevention conference, to be held at New Orleans, January 6 and 7, 1913, to voice what is fast becoming a nation-wide demand for the passage of the Newlands-Bartholdt river-regulation bill.

This bill involves a frank recognition of the principle laid down many years ago by Gen. Haupt, one of the foremost of our Government engineering experts, that the place to begin the work of flood prevention and river improvement is at the headwaters, not on the lower stretches of the rivers. Hold back the floods by storing in great reservoirs along their higher reaches the extra feet of water constituting the crest of the floods and not only will the rivers no longer overflow the country along the lower levels, but the water thus held back will serve to maintain navigation in seasons of low water. And not only this, but the stored-up water in the reservoirs can be made also to serve at innumerable points the purposes of irrigation and the creation of water powers. The cost of levee building will be much reduced. And thus the water wealth of our great valley becomes one of the grandest of our material assets, whereas now its waste makes it an annual liability.

Minnesota is one of the States which will share most largely in the benefits sure to flow from the passage of this bill, especially in the establishing of cheap water transportation for the products of the farm. It is an American, not a partisan, measure. It plans a vast expenditure—$50,000,000 a year or more. But in carrying forward the work it is proposed to employ the same engineers and the same plant now engaged on the Panama Canal. This is a guaranty of efficiency and economy. Therefore it is to be hoped that the people of Minnesota will urge upon their Congressmen an energetic support of the bill.

[From the Reno (Nev.) Journal, Oct. 5, 1912.]

CURBING THE MISSISSIPPI.

The Democratic plan to harness the Mississippi is in response to a demand that has been made for years. It comes not alone from the people of the South, but the North and West as well. Every year disastrous floods sweep down through the channel, ruining crops worth millions of dollars, devastating the land, and inundating cities. Not infrequently the rush of waters claim a toll of human life.

The people who live on the lands that flank the great stream want the waters curbed.

The people of the West ask that the flood waters be impounded and held to irrigate their lands.

It is simply a question of the people of the South joining hands with those of the West and acting together, each to get what they want.

If the flood waters are held in great reservoirs they will be checked.

Woodrow Wilson's ideas meet with those of the people east and west. He is in accord with the progressive thought of the day. He is a man who responds to the wishes of the people. It is because he catches the drift of public sentiment that he is indorsed by men of all sections. He has enlisted in the movement long ago started by Senator Newlands to save the water for those who need it and from those who do not.

This question of harnessing the waters of the Mississippi has been discussed for half a century. It has been dodged by men and candidates.

Now, after decades of agitation, it would seem that something shall be done by bringing together in a perfectly simple manner the people of the West and the South in an enterprise that will mean the saving of untold millions for each section of the country.

[From the Reno Gazette, Nov. 16, 1912.]

NEWLANDS DEVELOPMENT BILL.

The Newlands bill for the prevention of waste flood waters and the utilization of these surplus waters in the irrigation of millians of acres of highly productive land furnishes one of the most interesting proposals for national development ever suggested. It is practical. The assured beneficial results from it are such as to command widespread enthusiasm.

The resources of the United States are so vast and varied that thus far the country has prospered by gathering up what was lying about in profusion rather than through the thrifty development of less apparent sources of national wealth.

With millions of acres of the richest virgin soil awaiting the conservation of these waste waters, the duty of Congress is plain. We must have battleships for defense, but an even greater source of national security would be the cost of a few battleships applied to the development of lands capable, under irrigation, of supporting millions of prosperous Americans.

There are fully 10,000,000 acres of land right here in California that could be made productive through the conservation of waste water in the Sacramento and San Joaquin Valleys alone. The harnessing of the Colorado would add other millions to the productive resources of the State and Nation. Ten million prosperous people added to the Nation's reserve beats the construction of battleships as a means of national power and defense. (Los Angeles Express.)

[From the Los Angeles (Cal.) Cultivator, Nov. 21, 1912.]

STORE THE FLOODS.

The Newlands bill has such vast possibilities that many people are almost staggered in contemplating it, but almost the entire West favors it, and the East will favor it more and more as its real worth is understood. The Cultivator gives much more space to it this week. The question, Will the Newlands bill favor California? is answered by Mr. George Maxwell, known to irrigators the world over as one of the greatest flood conservation enthusiasts. For $5,000,000 per year can be put into the San Joaquin and Sacramento Valleys flood-storage works and a like amount along the headwaters of the Colorado, and it will mean wonderful advancement in material things for this State.

Mr. Maxwell touches upon some of the benefits to California of the North. The Colorado River work is only incidentally referred to, but there are said to be over 5,000,000 acres of lands along the Colorado, a liberal portion of them being in Arizona, and some below the Mexican line which would be directly benefited by the operation of this bill. We need not be concerned with that below the line except that under existing treaties Mexico is now entitled to one-half the normal flow of the river. The Imperial Valley asserts that she is entitled to all the waters now flowing during the drier season in the Colorado River. The Chucawalla Valley, the Palo Verde Valley, and the lands in Arizona which can be supplied from the Colorado must go dry unless the floods are stored. The Government can invest its money no more profitably.

A great convention is to be held in Los Angeles this week to discuss this matter, and already vigorous action is being taken to arouse enthusiasm which will lead to action.

[From the Los Angeles Express, Nov. 22, 1912.]

SOUTHWEST'S OPPORTUNITY.

If the Newlands river-regulation bill is enacted into law in form to include the conservation of the waste storm waters of the Colorado, the Sacramento, San Joaquin, San Gabriel, and other streams, the multiplication of the productive resources of the Southwest would so far surpass anything heretofore experienced in land development as to be scarcely conceivable.

Anyone who has seen the transformation worked through irrigation development in various parts of the country knows something of what it would mean to reclaim 10,000,000 acres of the richest virgin soil on the continent through the application of water under climatic conditions that are destined to convert a vast empire into a veritable paradise.

The plan is absolutely feasible. All that is needed is men of vision and business courage to take up the work of public education, money with which to carry forward an aggressive and successful campaign, and a public opinion that is alive to a great opportunity.

[From the Statesman, Austin, Tex.]

FOR FLOOD PREVENTION.

The cause of river regulation through source stream control, the use of now wasted flood waters, and the prevention of floods and overflows has been given great impetus through the consolidation of the National Irrigation Association and the National Reclamation Association, under the name of the latter, with C. B. Boothe, of Los Angeles, as president, and George H. Maxwell, of New Orleans, as executive director, and the announcement that a national conference will be held at New Orleans January 6 and 7, 1913, for the purpose of finally deciding upon the details of the campaign to secure the enactment of the Newlands-Bartholdt river regulation and flood prevention bill by the Federal Congress.

This conference will be held by the National Reclamation Association, under the auspices of the Los Angeles Chamber of Commerce. The New Orleans Progressive Union, the Pittsburgh Flood Commission, the Louisiana Bankers' Association, the Stockton (Cal.) River Regulation Association, the Arizona and California River Regulation Commission, the Louisiana Reclamation Club, and other organizations and delegates representing the commercial organizations of every State in the Union are expected to attend.

The primary object of the conference will be the consideration of the Newlands-Bartholdt bill as it affects the interests and needs of the several sections of the country.

This bill provides a continuing appropriation of $50,000,000 annually for 10 years and the organization necessary to enable the Federal Government to harness the source streams of the great rivers in such manner as is necessary to permit the use for irrigation, for power, and for dry weather navigation of the flood waters that now go to waste in destructive torrents, for the building and maintenance of necessary levees, and for other works of a protective nature. Its application is general, and all of the great rivers come within the scope of its operations.

[From the Republican, Phoenix, Ariz., Nov. 23, 1912.]

PROOF AGAINST HARD TIMES.

One of the assigned causes for the financial disturbance of 1907 was the San Francisco fire and earthquake. That was undoubtedly a contributory cause, for when such a vast volume of property is utterly annihilated the loss of it must be felt in all parts of the country.

Yet all the property destroyed at San Francisco was of small volume compared with the annual waste by floods in this country. This great loss does not disturb the country for the reason that it is regarded as a matter of fact, something that can not be avoided, an overhead expense, incident to carrying on our business.

But this annual loss, great as it is, is small in dollars and cents compared with what we lose by neglect—neglect to avail ourselves of the means of creating wealth, neglect to reclaim wealth-creating lands, neglect to conserve and make use of other natural resources.

No attention whatever had been given this matter until it began to be hammered upon the country by Mr. Roosevelt; but before we were fairly awake he passed out of office, since when we have been conserving things in a most leisurely and haphazard way, hardly at all.

A nice thing about a genuine, thorough conservation policy is that when properly executed its benefits will the threefold. For the prevention of the great annual devastating floods (the first benefit), control must be established over the headwaters of our streams. Thus we will have means for developing power and electrical energy and for the irrigation of arid lands, these results being grouped under the head of the second benefit.

With the waters thus controlled at all times, there will be preserved a steady flow in the lower rivers for navigation, but never enough for floods, thus lessening the swamp area of the country and making easier the drainage of swamps not directly caused by the floods. Here we have the group of the third benefit.

Now, if this country, in all its breadth and length, could be disastrously affected by such a loss as that caused by the San Francisco earthquake and fire, how would it be affected by the prevention of the waste by floods, and how would it be affected if we were to make use of the great natural resources which we are neglecting?

Senator Francis G. Newlands, to whom we of the West owe so much for what has been accomplished in the way of reclamation, has already taken up this still greater matter for the benefit of not only the West but the entire country. We wish him God speed in this new undertaking and hope that the same degree of success will crown his efforts as that which followed his movement for the reclamation of arid lands.

[From the Picayune, New Orleans, La., Dec. 26, 1912.]

THE CONVENTION FOR PROTECTION FROM FLOODS.

Early in January there will be held in this city a convention representing many States of the River Regulation and Flood Prevention Association.

This is a very important body, and, while it will devote its energies to dealing with Mississippi River and its great tributaries, it must not be confounded with the Deep Waterways Association that has held annual conventions in the cities along the river, several of which were in New Orleans.

The object of the first-named convention is to arrest and store up flood water in the great tributaries of the Mississippi River so as to prevent any and all floods in the lowlands of the southern tier States, while the subject of river navigation is a secondary consideration, although not neglected. The object of the deep-waterway advocates is to provide first of all for the uses of navigation, while the measures necessary to obtain deep water in the channel are considerations of chief importance, while protection from floods is to follow as a necessary consequence.

The regulation of the river as the main factor in flood prevention is urged in the interest of the draining and reclamation of the lowlands of Louisiana, Mississippi, Arkansas, and other States, while the deep-water advocates are working in the interest of such river improvements as will clear out and maintain a channel for a great river commerce and, as a necessary consequence, keep the river within its banks and thereby put an end to floods. It is necessary to distinguish between the two bodies so that all the objects and interests concerned may be understood without confusion or misapprehension, because all are important to the people of this city, the people of the lowlands, and the owners of the swamp region.

The movement for river regulation is in aid of a bill already before Congress which embraces among its chief provisions that, since the destructive floods in the great continental river are caused by the waters that are brought down by the main tributaries, and since protection from these floods is a public duty, and since all the natural interstate waterways in the Nation are necessarily under the direct jurisdiction of the National Government, it is the duty of the National Government to prevent these floods.

This prevention, according to the terms of Senator Newlands's bill, is to be accomplished by constructing great dams on all the chief tributaries and store up the superfluous waters of each tributary so that no flood can occur in the main river, and in seasons of low water the contents of the lakes or reservoirs formed by the dams are to be drained out by degrees, so that there can be no flood, while the water in the channel will be reenforced when needed for navigation. In the absence of flood waters in the Mississippi River the operation of draining the lowlands swamps can go on undisturbed by any fears of future inundation.

But in order to carry out this plan of keeping the flood waters away from the southern lowlands, they will have to be stored up on the lands of Northern States. For every square mile of southern land protected by the proposed process a corresponding area of northern lands must be covered by the water stored up in lakes created for the purpose, and as these artificial inundations will necessarily be in the valleys of the tributary rivers they will cover up a large extent of valuable lands nearly equal in area to those it is designed to protect in the South.

The great tributaries on the east side of the Mississippi are the Ohio, the Tennessee, and the Cumberland. The Ohio takes water from the States of New York, Pennsylvania, Virginia, West Virginia, North Carolina, Ohio, Indiana, Illinois, Tennessee, and Kentucky. This is an immense area, with an annual rainfall of 40 to 50 inches. Many reservoirs or artificial lakes will be required to store up the excess of waters, and much of this land is of large value, much of it underlain, with coal, oil, and iron ore.

Then there is the Tennessee River, as long and draining as great an area as the Ohio and taking water from Virginia, North Carolina, Georgia, Tennessee, Kentucky, and Alabama, carrying off as great a rainfall and requiring large spaces in which to store its surplus waters.

On the west side of the Mississippi is the Missouri, not less than 3,000 miles long and taking water from British America and a vast region of the United States, equaling a half million square miles of area. It is true the rainfall is not so great as on the east side of the Mississippi, but for all that the Missouri floods must be caught and stored up in great lakes.

Then there is the Arkansas River, taking water from Colorado, Kansas, Oklahoma, Missouri, and Arkansas. It will require large reservoir capacity to hold its floods.

It is to be remembered that the land upon which these mighty waters are to be arrested and imprisoned will have to be bought and a vast work of construction required, and the lands so covered up will be lost to agriculture and every other productive use.

On the other hand, experience in this country and for many centuries in Holland proves that the river floods can be fenced out from the lands, and in this country it has been done for years in the past to a large degree. There is no question of the efficiency of the levee system, provided the stability of the banks on which they are built can be assured, and that they can be has been demonstrated.

The Mississippi River Commission, a national body charged with the improvement of the river for navigation, worked out to a certainty that the current of the river would clear out its channel and maintain it for every purpose of commerce and navigation if the swiftly moving waters could be prevented from corroding and undermining the rich alluvial lands which formed the river's shores. Not having the funds to devote to bank protection, that sort of work was only done in short stretches and not in a connected systematic way as is required. There are localities in which the ordinary work of revetment has not proved efficient, but there is no trouble in meeting every local condition and difficulty.

The entire work, since it devolves largely on the National Government, should be left as to the methods to be employed to the United States engineers, since no more uniformed, impractical theorist is competent to decide on it. It is a matter of experience and not of theory that levees properly built on properly protected banks will fulfill every demand for protection from floods, and the operation of draining and reclaiming the swamps of Louisiana and Mississippi can be carried on with as much security as that enjoyed by the people who live and have lived for centuries behind the dikes and embankments that keep out the high tides of the North Sea and the floods of the River Rhine.

What is of the greates importance is that the entire subject of protection shall be fully discussed and made fully intelligible to all concerned and an agreement arrived at to leave the decision as to measures and methods to the United States Army engineers. The grand success made by those engineers in the construction of the Panama Canal has established universal confidence in their sound professional judgment as well as their scientific knowledge, and the final decision can be left to them with the assurance that the work will be faithfully and efficiently done.

[From the Stockton Daily Evening Record, Stockton, Cal., Tuesday, Nov. 26, 1912.]

MEN WITH A VISION.

The man with a "vision" is no longer championed by Y. M. C. A. orators alone. Like the man who was once considered soft-headed because he "stood for principle," the man with a vision is being called into the public service. In a hard-headed, practical age, society is turning for relief and hope to the dreamer of great dreams.

One was reminded of the fact last evening in listening to the closing words of Senator Newland's address on our country's river problems.

Sentiment is not indigenous to levees. Landscape art is hardly expected to gather its inspiration from dams and ditches. Esthetic conceptions are not searched for in the reclamation of swamps. The figures that tell of the devastation wrought by floods do not sing in poetic strain. The possibilities of water conservation and distribution have never been the inspiration of epic or flowery prose.

But the human mind is breaking from the thongs of purely utilitarian conceptions of values. Senator Newlands, in his plea for his bill, urged it at once as a business measure and as one that would lead the people into easier, happier, and fuller enjoyment of the bounties of nature. His call was for men of vision, for men whose perspective could sweep far beyond the half billion dollars the Government is asked to spend for irrigation, flood protection, and navigation. He asked that man fix his mind not on piles of profits counted in shimmering gold, but on the desert that would be made to bloom as the rose, on the river running free and clean in the interests of peaceful commerce, on the mountain water storage lakes from which the thirsty valleys could drink deep and long for their nourishment.

It was a pleasure to hear the Nevada Senator extol a noble, humanitarian sentiment; it was a pleasure to learn that he bases his plea for his magnificent project on the good it would do mankind rather than the profits it would bring to "business." It was even more interesting to note that such sentiments found ready response in an audience composed largely of business men. Our citizenship seems to be far more receptive to great visions than it was a few years ago. The dull, dreary grind of the business man and the laboring man has not lessened, but both of them—equally victims of the system evolved by the sordid past—are looking forward to the day when the peace and plenty spread in the lap of nature by the Creator shall be the common, free, and full heritage of all mankind.

[From the Stockton Daily Independent, Nov. 26, 1912.]

NEWLANDS DOING GOOD WORK.

There is a growing interest being manifested by all classes of people in water problems, and throughout the country there is a general awakening to the fact that the land's greatest heritage has been negligently left to go to waste in its flow to the ocean and too frequently doing untold devastation and enormous damage to property in its path. That every ounce of water that flows to the sea should be made to serve a useful purpose is now dawning upon the people as sound business policy, and throughout the Nation conservation schemes are being given more attention than ever before. Stockton has been among the foremost in its efforts to harness the waters, and the progress made here in effecting an organization to that end and the public-spirited interest taken in the conservation movement bids fair to win for this section much earlier relief than may be gained in other parts of the country. Conservation of flood waters is now recognized as one of the most crying needs of the Nation, and until the waters have been made to serve all, with damage to none, the country's development will be held in check and the people deprived of the fruits of their greatest asset.

Senator Newlands's plan of Federal recognition of the waterways problem is most logical, viewed in a general sense. How it may work out in detail may be debatable, but the general plan to have the Government, through appropriations, enable localities to deal directly with their waterway problems offers the greatest hope of any plan yet submitted to the people, and the educational work the Senator is doing throughout the country in the interests of the waterways, flood-water control, navigability of streams, and the conservation of all waters is accomplishing a great deal of good, and his efforts will stamp him among the foremost of conservationists and the author of one of the most important bills ever presented to Congress.

[From the Los Angeles (Cal.) Times, Nov. 27, 1912.]

CHECK THEM.

The workers of the Arizona and California River Regulation Commission have a great work before them at Washington in aiding, by their presentation of facts and arguments to the committees of Congress, to obtain the passage of a bill appropriating $10,000,000 per annum for reservoirs and aqueducts in California and Arizona. In this work they will have able allies, or, to speak more accurately, they will ably aid those who are already allied for the work. There is Senator Frank Newlands, of Nevada, who is the father and mother and uncle and aunt of the policy of Federal aid to irrigation. There is the poetical young Senator, Henry T. Ashurst, of Arizona, who in one term has leaped to the front as the blue-sky orator of the Senate. There is Senator Smith, of Arizona—good old Mark—who always knows what he wants and usually gets what he goes for. When the Secretary of the Treasury sees Mark coming with a demand for an appropriation for Arizona he places the key of the Government strong box on a desk and crawls under the office lounge. There are Senators Smoot and Sutherland, of Utah, who will leave their dinners at any time to explain to a New England Congressman the advantages of irrigation. There are our own Senators and those from New Mexico, from Colorado, from Wyoming, from Idaho, from Washington, and from Oregon. In all there are 20 Senators from the Pacific and Rocky Mountain States, and there are 24 Senators from States fronting on the Mississippi River who can be counted upon to push legislation for the impounding of flood waters and the irrigation of arid lands.

With the passage of the bill in behalf of which the Arizona and California River Regulation Commission will do stalwart work, the cry of "back to the farm" will no longer be a barren ideality, for there will be farms to "go back" to on both sides of the Colorado River. Parker will be the third city of Arizona, the lower San Joaquin Valley will be densely populated, and Los Angeles will be the depot and entrepôt of an additional million of people. The Arizona and California River Regulation Commission ought to be checked by our merchants and manufacturers and home owners—checks in three figures preferred, those in two figures gratefully received.

[From the Stockton (Cal.) Mail, Nov. 27, 1912.]

SPLENDID START FOR RIVER REGULATION.

The results that may be accomplished by thorough organization, persistence, and attention to detail are shown in the action of the realty dealers, who have assumed the initiative and taken up the responsibilities of a campaign for the Newlands bill. The sentiment was here; energy and influence were not lacking; but it needed the practical advice of George H. Maxwell to give proper direction to the work. Since he has handled similar conditions in practically every parish of Louisiana, and has organized scores of associations having in view the same ends, his cooperation was appreciated to the utmost.

How general is the desire for solution of the water problems of this section of the State will be indicated by the fund Stockton business men are raising to exploit the needs of the San Joaquin River and to assist in bringing about adoption of the Newlands bill. That California knows the situation and is fully conversant with the needs of this community is not sufficient. Mr. Maxwell wants the matter explained to the whole United States, so that there may be no interference because of congressional ignorance. The movement has a flying start, the object is a most worthy one, and it is to be hoped that every Stockton business man will contribute toward the campaign fund.

[From the Los Angeles (Cal.) Cultivator, Nov. 28, 1912.]

RECLAIMING THE LANDS.

We doubt not that the communication in last week's Cultivator by Mr. George H. Maxwell will be considered a wild dream by many readers, wilder perhaps the one outlined in this issue calling for reclamation of the 5,000,000 acres along the Colorado River, but we trust the address made at the recent River Regulation Congress held in Los Angeles will attract attention to the benefits to this country should the dreams be realized. That they will be goes without saying, if the American people awake to the necessity of the realization.

For the Government to expend $500,000,000 will call for strenuous work; but with the party now in power committed to flood storage, and with the necessity more apparent than ever for parties standing on their platforms after election as well as before, we believe the greatest need is immediate action to bring before Congress and the East the necessities in the case.

Fortunately the Newlands Act will not only benefit California and Arizona and the whole West, but much of the East.

[From the Redlands (Cal.) Review, Dec. 1, 1912.]

THE CAUSE OF NATIONAL RECLAMATION.

The cause of river regulation through source-stream control, the use of now wasted flood waters, and the prevention of floods and overflows has been given great impetus through the consolidation of the National Irrigation Association and the National Reclamation Association under the name of the latter, with C. B. Boothe, of Los Angeles, as president, and George H. Maxwell, of New Orleans, as executive director, and the announcement that a national conference will be held at New Orleans January 6 and 7, 1913, for the purpose of finally deciding upon the details of the campaign to secure the enactment of the Newlands-Bartholdt river-regulation and flood-prevention bill by the Federal Congress.

This conference will be held by the National Reclamation Association, under the auspices of the Los Angeles Chamber of Commerce, the New Orleans Progressive Union, the Pittsburgh Flood Commission, the Louisiana Bankers' Association, the Stockton (Cal.) River Regulation Association, the Arizona and California River Regulation Commission, the Louisiana Reclamation Club, and other organizations and delegates representing the commercial organizations of every State in the Union are expected to attend.

The primary object of the conference will be the consideration of the Newlands-Bartholdt bill as it affects the interests and needs of the several sections of the country.

This bill provides a continuing appropriation of $50,000,000 annually for 10 years and the organization necessary to enable the Federal Government to harness the source streams of the great rivers in such manner as is necessary to permit the use for irrigation, for power, and for dry-weather navigation of the flood waters that now go to waste in destructive torrents, for the building and maintenance of necessary levees, and for other works of a protective nature. Its application is general, and all of the great rivers come within the scope of its operations.

The conference will pass upon the adequacy or inadequacy of the specific appropriation provided for the improvement of such rivers as the Mississippi, the Ohio, the Missouri, the Sacramento, the San Joaquin, and recommend such changes in the specific appropriations as seem wise in the light of the great flood of last spring. No attempt will be made to change the fundamental principle on which the bill has been created. In this way it is planned to safeguard the interests of those sections needing levees, of those sections needing water-power and dry-season navigation, and of those sections needing irrigation.

With the specific recommendations of this conference in hand, backed up by resolutions of indorsement by many leading organizations in all parts of the country which have already been secured, the combined forces of the allied organizations of the National Reclamation Association, headed by George H. Maxwell, will go to Washington to begin the fight for the bill at close range.

The Democratic Party is committed to a policy of river regulation through source-stream control, and in a telegram dated Sea Girt, N. J., September 29, to Senator Francis G. Newlands, president of the National Irrigation Congress, then in session at Salt Lake City, Gov. Woodrow Wilson, President elect, said: "Please express to the National Irrigation Congress my hearty approval of the policy it has met to promote, and especially of the policy of supplementing bank and levee protection by storage of flood waters above for irrigation and water power, turning floods from a menace into a blessing and at the same time abundantly feeding navigable waters."

With thousands of letters from manufacturers and business men in all parts of the country indorsing the Newlands-Bartholdt bill and promising full cooperation in its possession, the executive committee of the National Reclamation Association, which is domiciled in New Orleans, is of the opinion that opposition to the bill will be short lived once the fight for its enactment shall have been carried to Washington.

[From the Rochester (N. Y.) Times, Dec. 4, 1912.]

RIVER REGULATION.

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[From the Los Angeles (Cal.) Tribune, Dec. 5, 1912.]

WIDE INTEREST IN RECLAMATION MEASURE.

Interest manifested in the Newlands-Bartholdt river regulation bill is highly encouraging to its friends. A national conference, to be held in New Orleans January 6 and 7, in behalf of the movement to secure a $50,000,000 appropriation each year for 10 years from Congress for the harnessing of streams and prevention of floods promises to be one of the notable gatherings of recent times.

With the year's appalling destruction of property and life along the Mississippi fresh in mind, the folly of meeting the protective needs of river valleys by feeble levees or any other method than control of headwaters should impress Congress. The Mississippi flood and similar catastrophies in the Missouri, Ohio, and other valleys are monuments, so to speak, to American stupidity and waste.

With proper control of headwaters there need be no floods. There could be millions of blooming acres in California and elsewhere now barren with thirst for water that not only goes to waste, but, gathering sudden volume, becomes an engine of terrible destruction. It is not too much to say that the Newlands-Bartholdt bill proposes the surest and most promising investment ever made by the Government.

Volumes of water that are a curse to humanity may be turned into a blessing. It will be done—if not by the next Congress, then by a later one. And when it is done and the fruits in the form of radiant land and mighty electric power are enjoyed by our children they will marvel at our primitive stupidity that so long wasted the gifts of God right at hand and whined about the high cost of living.

[From the Brawley (Cal.) News, Dec. 6, 1912.]

MAKING HISTORY.

No movement more important to the Southwest has been ever undertaken than the conservation of the flood waters. If the Newlands bill, with an appropriation of $5,000,000 a year for 10 years for work on the Colorado River and its tributaries becomes a law, the Imperial Valley will be the chief gainer.

As the largest irrigation system in the United States it commands respect; with the Mexican lands added, it will rival the largest in the world, with more than a million acres under water.

The local aspect of the movement alone is stupendous. When considered as a part of the whole the proposition reaches a magnitude placing the United States among the wonder workers of the world.

But not the lands along the river alone will benefit. Irrigated sections call for more of the necessities and luxuries of life, owing to the dense population, than any other section of the country. Instead of seeking new markets maintained precariously abroad the United States will provide them at home, and dollar diplomacy will be outdistanced.

With such an aim the Imperial Valley can not fail to stand behind the Arizona and California River Regulation Association with all the vigor and money at its command.

[From the Philadelphia Inquirer, Dec. 7, 1912.]

TAFT ON THE MISSISSIPPI.

President Taft took unassailable ground when he declared that he was in favor of an appropriation of fifty millions to conserve the waters of the Mississippi so that the damage from the annual floods might be prevented, but was opposed to spending a dollar simply to dredge the channel for the sake of a commerce which does not exist and which is not likely to revive.

As the Inquirer has often pointed out, the Mississippi can never be made a great highway of transportation until more fundamental considerations are first given attention. At present the river has a small amount of local steamboat traffic, for which the channel is sufficient. Otherwise the Government maintains the lower reaches at the delta for the benefit of the great and growing commerce of New Orleans. It can do no more in this specific direction.

But it must be apparent that the channel should be looked after, not on transportation grounds but those of public safety and conservation of property. Every year the natural hindrances to drainage disappear and the floods become higher and shorter, with consequent damage of enormous extent.

The suggestion to create great reservoirs in Arkansas and elsewhere, to convert present swamps into lakes, so that the floods may be regulated, just as are the waters of the Nile, seems to be the only practical proposal. Congress would do well to have this consideration carefully examined and spend money on any good plan. The " pork-barrel " feature of the Father of Waters must disappear.

[From the Arizona Gazette, Phoenix, Ariz., Dec. 10, 1912.]

NEWLANDS'S RIVER REGULATIONS.

There is now a bill before Congress which is attracting much attention North, South, East, and West. It was introduced April 6, 1911, by Senator Francis G. Newlands, of Nevada, is known as the Newlands river regulation bill (S. 122), and like the national irrigation act, with which Mr. Newlands's name is inseparably linked, this also is a masterpiece of constructive statesmanship. For years the subject matter of this bill has been before the National Irrigation Congress for discussion and action. Some of our citizens will recall that the irrigation congress, held in Phoenix in 1896, passed a resolution calling on the Congress at Washington to appropriate money for the building of reservoirs, and the river and harbor bill of that same year provided for the examination of reservoir sites in the West to determine whether they were practicable and desirable for three things: First, for improving the navigation of navigable rivers; second, for providing water for irrigation of arid lands; and third, for preventing destructive floods.

Under that appropriation Capt. Chittenden, since advanced to rank of brigadier general, made an exhaustive report which was a model. He clearly demonstrated that reservoirs on the headwaters of navigable streams would regulate the flow of the rivers by holding back the water that otherwise would be wasted in time of floods and turning it into the stream at the low-water season when it was needed both for navigation and irrigation. Thus navigation would be improved, irrigation water provided, and destructive floods prevented.

This was in 1896–97, but the Nation was not awake to the wisdom or necessity of such an economic policy. However, " all things come to them who wait " and " hustle while they wait," and the irrigation congress and others who believed in the Chittenden report hustled and waited.

In June, 1902, the national irrigation act was the first notable result of this hustling and waiting, and nine years later comes this " river regulation " by the Nation. As introduced, this is a bill " to create a board of river regulation and to provide a fund for the regulation and control of the flow of navigable rivers in aid of interstate commerce, and as a means to that end to provide for flood prevention and protection, and for the beneficial use of flood waters, and for water storage, and for the protection of watersheds from denudation and erosion, and from forest fires, and for the cooperation of Government services and bureaus with each other and with States, municipalities, and other agencies."

There is " reserved, set aside, and appropriated " $50,000,000 annually for each of 10 years, and " made available until expended, out of any moneys not otherwise appropriated." The " board of river regulation " will consist of the Chief of Engineers of the Army, the Director of the Geological Survey, the Forester of the Department of Agriculture, the Director of the Reclamation Service, the Chief of the Bureau of Plant Industry of the Department of Agriculture, the Secretary of the Smithsonian Institution, one civil engineer, one sanitary engineer, and one hydroelectric engineer. The last three shall be appointed by the President, hold office at his pleasure, and each receive $7,500 per year. All formal action taken and expenditures authorized by the board shall be reported to the President and by him transmitted to Congress.

Broad powers are given the board for cooperating with States, municipalities, corporations, towns, counties, districts, persons, and associations, as well as with the various scientific and constructive bureaus of the United States, for the encouragement of independent initiation and construction.

The board is also empowered to harmonize and unify and bring into correlation and coordination the investigations made and information and data obtained by the various bureaus and offices of the Government relating to questions involved in this act and with a view of securing unity of action, promoting economy, and providing against duplication, unrelated or incomplete work.

The board must develop and prepare comprehensive plans for the conservation, use, and development of the water and forest resources in such manner as will best regulate the flow of source streams, navigable rivers, and a hundred other phases of the subject, like flood protection, drainage, reclamation of swamp and overflow lands, etc.

The Secretary of the Smithsonian Institution is to secure all obtainable knowledge concerning the problems involved, establish a museum of conservation to aid in the education of the public on these subjects.

The Chief of the Bureau of Plant Industry, the Forester, the Director of the Geological Survey, the Director of the Reclamation Service, and the Chief of Engineers of the Army shall each use all the resources of their offices to contribute to the vast work of this board, and the three engineers of this board, appointed by the President, are to supplement the above.

Should the current revenues be insufficient to provide the $50,000,000, the President is authorized to make up the deficiency by issuing 3 per cent 30-year United States bonds.

For carrying out the provisions of this act the moneys annually appropriated shall be apportioned as follows:

Smithsonian Institution, $1,000,000.
Bureau of Plant Industry, $2,000,000.
Geological Survey, $3,000,000.
Reclamation Service, $10,000,000.
Forest Service, $10,000,000.
Corps of Engineers, United States Army, $24,000,000.

Should this bill become a law it would save annually millions and tens of millions of dollars and thousands of lives, would multiply transportation facilities and solve vexing transportation problems, improve national sanitation, reclaim more than 80,000,000 acres of swamp lands, increase food production and decrease cost of living, and save this Nation from disastrous floods, such as are a curse to China to-day and which made of the surpassingly rich and fertile plains of Mesopotamia a " land of desolation " over which the jackal, the hyena, and other wild beasts now roam at will and alone.

[From the Stockton (Cal.) Independent, Dec. 12, 1912.]

CURRY FAVORS NEWLANDS'S BILL, PROVIDED IT IS AMENDED TO INCLUDE AN APPROPRIATION OF 50,000,000 FOR CALIFORNIA RIVERS.

Strong efforts will be put forth by Congressman Elect Charles F. Curry, of this district, to secure the passage of the Newlands conservation measure and to secure under that bill $5,000,000 per year for 10 years for the conservation of the flood waters of the San Joaquin and Sacramento Rivers. He defined his position yesterday morning, following a conference with George H. Maxwell, executive director of the National Reclamation Association, who chanced to be in Stockton yesterday.

Mr. Curry states that he had at first planned to introduce a bill asking $40,000,000 to be immediately available for the San Joaquin and Sacramento Rivers, but he agreed to withhold it provided the Newlands bill is amended to provide $50,000,000 for the two California streams, and to do all in his power to secure the passage of the bill embodying a nation-wide conservation plan.

[From the Pomona (Cal.) Times, Dec. 13, 1912.]

FLOOD WATERS.

Egypt is the creature of the Nile. In other words, the great valley and the level lands about the delta have for centuries been dependent on the flood waters of that great river. When the Nile poured its annual floods through the valley and inundated the fertile fields on either side, then Egypt had a year of plenty and the land brought forth by handfuls. If the floods failed, then Egypt had a year of famine.

It may never have occurred to our readers that right at the very doors of California we have another Nile and another Egypt. The great Imperial Valley and the Colorado River every year enact the same thing that has gone on for centuries in Egypt. With the great floods of the Colorado River comes the riches that have made the Imperial Valley the granary of the Southwest, as well as the most wealthy agricultural district in the world. Every inch of available water that under the present system can be secured is now at work in the Imperial Valley, and yet there are thousands of acres that are ready to blossom as the rose if they can only receive the life-giving fluid. What is to be done? There is only one thing that can be done, and the great movement is already under way. It is no less than the conservation of the flood waters of the Colorado River. Every year hundreds of thousands of inches of water are emptied into the Gulf of California or poured in a flood over the fertile fields along its banks, just as often carrying devastation as prosperity to the lands on either side. Senator Newlands has introduced into Congress a bill whereby millions of dollars are to be appropriated for the erection of great storage reservoirs, which shall be filled to the brim with the flood waters during the time of the annual freshet. These waters shall remain impounded until such time as they shall be needed, and then slowly conducted through canals to the thirsty fields of the great Imperial Valley to bring riches to thousands of ranchers and to raise food and clothing for a great multitude of people.

It is a great undertaking and worthy of the effort of a lifetime; for if Senator Newlands accomplishes nothing more during the remainder of his life than to bring to a successful issue the great undertaking that he has inaugurated he will have reared to himself a monument that shall be almost as imperishable as time itself. It is to be hoped that every Congressman and the two Senators from California will give their very best efforts to support the bill that shall bring prosperity and millions of dollars to this great State of ours.

For many years past we have had a growing conviction that the future of the water problem of southern California was connected inseparably with the conservation of the flood waters of the country. We have a half dozen natural locations in this vicinity where, with the expenditure of a few thousands of dollars, great storage reservoirs could be built. These great impounding places can be connected with every acre of land and orange grove in these valleys by water pipes already installed and floods of gravity water be poured on our thirsty orchards at a price much less than is now demanded of the rancher. The use of these flood waters will serve several purposes; the problem of caring for them during the winter season will be greatly lessened; the ruin that they frequently accomplish will be avoided; their use early in the season will conserve the underground supplies and remove the anxiety of the men whose business it is to furnish from an ever-decreasing supply the life-giving fluid for an increasing acreage of citrus trees.

This move for the conservation of the flood waters is one in the right direction, and we see no reason why the matter should not have the hearty support of every Member of Congress. As to starting the work of flood-water conservation in southern California, we believe that the movement is worthy of serious consideration by practical men. The drilling of wells by small companies represents a makeshift necessary because of a scattered population and very limited capital. With our rapidly increasing population and the rapid growth of capital, there is no reason why we should not seriously contemplate the massing of our means and saving for our future prosperity that which at present is an annual source of waste aggregating hundreds of thousands of dollars.

[From the Stockton (Cal.) Mail, Dec. 16, 1912.]

MAXWELL, THE NEWLANDS BILL, AND THE OPPORTUNITY OF STOCKTON.

On behalf of northern California, the region most vitally interested in river control and flood prevention, Stockton has taken the initiative in support of the Newlands bill, and a week's effort has sufficed to demonstrate that the movement will be an unqualified success. For the time being there is no matter of more importance to the community, and even in this busiest of seasons it is not unreasonable to suggest that the bankers, merchants, and landowners contribute some portion of their time in getting fully acquainted with the plans and purposes of the campaign and the men who have had the enterprise to gain this credit for Stockton.

Because Los Angeles, having no rivers of her own, is interested in the improvement of the Colorado, several hundred miles away, the live and energetic commercial bodies of that city have formed their own association, thereby seizing the distinction of being the first California city to organize a branch of the National Reclamation and Irrigation Association. It needs no prophet to foretell that Los Angeles will take a prominent part in the campaign for passage of the Newlands bill, and it will be interesting to compare the methods of the south with the efforts of all the commercial bodies in northern California. This is a subject in which more than 50,000 citizens of the Sacramento and San Joaquin Valleys have been interested for nearly half a century. Without recourse to complicated legislation and without the danger of vexatious delays, there is to be procured through the Newlands bill for immediate use a fund of $50 000,000 for improvement of the two rivers, for prevention of floods from which Stockton has been the greatest sufferer and for the construction and maintenance of canals and reservoirs that will irrigate millions of acres of semiarid land—an empire that will support its hundreds of thousands.

Sacramento would gladly have taken over the central organization that will campaign for the Newlands bill on behalf of California, but Stockton already had founded the river regulation commission, and George H. Maxwell, executive officer of the national association, came here to find a few public-spirited men already battling for recognition and already seeking relief from the annual dangers of floods. It is through the days and nights that Maxwell has devoted to the work, through his matchless energy and his long experience, that Stockton is to-day so well advanced in the preliminary work.

Maxwell has undertaken, in good faith, to do something that northern California, even in the hour of greatest danger and heaviest loss, has never attempted. He is endeavoring to get together the fund necessary for a campaign that will make an impression upon Congress, to be expended in the same manner and at the same time as the funds raised in Los Angeles, in Arizona, in New Orleans, and Pittsburgh. He knows the value of concentrated results and organization. He prefers to depend upon the voice of the Nation rather than upon the efforts of one Congressman or of one congressional delegation.

Out of the $12,000 necessary to launch the two-year campaign, Maxwell will not receive a dollar. The completion of this fund will simply obligate him to remain in California and direct another fund-raising campaign for $30,000 more, to be secured outside of Stockton, and from which is to be deducted one-third of his annual salary and expenses. At a meeting in the chamber of commerce last week President Nims of that organization intimated to Maxwell as broadly as possible that he might name his own salary and remain in Stockton as its chief booster, but Maxwell only smiled and shook his head. Maxwell's salary of $12,000 a year, in view of the work he has done, the experience and acquaintance he has gained, and the sacrifices he has made to continue this work in and out of season for many years past is more than reasonable, since it is procured largely through his own efforts, the contagion of his enthusiasm, and the soundness of his advice. It is not more than is paid to-day to the manager of an interurban railway. It is exceeded by the remuneration of a dozen department chiefs of the Panama-Pacific Exposition, and it is the minimum for the executive heads of many California corporations who are not the equals of Maxwell in ability or enterprise.

It was Maxwell who analyzed the sentiment of northern California upon the river-control question, and it was Maxwell, the confidant and assistant of Senator Newlands, who obtained his consent and the consent of all the eastern and southern river-improvement associations to incorporate in the pending bill the clause which provides for the Sacramento and San Joaquin Rivers an annual appropriation of $5,000,000 for 10 consecutive years—a fund that is admitted by all engineers to be adequate to solution of all the problems the people of this section have faced for many years.

That Stockton will gain prominence in this campaign can not be doubted. The work that can be done with $12,000 is laid out so that none may doubt its efficacy. The names of the hundred men who will compose the river-regulation roll of honor will be worth remembering when Stockton has a population of 100,000.

[From the El Centro (Cal.) Progress, Dec. 17, 1912.]

MAXWELL SHOWED US.

"Where does the money go?"

That was the main question put up to George H. Maxwell yesterday at the meeting called to hear the Newlands bill discussed.

The situation locally is almost identical with the situation nationally. Here the irrigation directors wish the people to express themselves as to their desires in helping to finance the campaign of education in favor of the Newlands bill. The directors themselves know the great benefits that would accrue to the valley should the bill with the Colorado River amendment attached be passed. They naturally want the O. K. of the people before acting in the mattter. Congressmen are the same way. When it comes to making an appropriation of practically half a billion dollars Congress wants to know if the people of the United States favor it.

This favorable sentiment must be created. To create it 20,000 editors must be converted; daily, weekly, and monthly mail must be sent out; tens of thousands of dollars must be spent for postage; more must be spent for literature, its composition and printing; the whole Nation must be aroused.

The Newlands bill must become a household word. It must be made popular. Its provisions must be heralded from Maine to California.

Men must be employed to do this work. Mr. Maxwell himself has given 20 years of his life to this work already. He is the foremost exponent of conservation of flood waters of various rivers; his time is valuable; he has drawn no pay for almost a year; he said he would continue this great effort even if he had to beg pennies on the streets to pay his expenses.

It cost a million dollars in honest effort to elect Woodrow Wilson President of the United States.

It surely is worth one-fifth of that amount to create a public sentiment that will compel the passage of the great Newlands bill, which is the masterpiece of legislation of the twentieth century.

Imperial Valley's part can surely be $5,000 if Stockton City can put up $12,000.

[From the New Orleans Item, Dec. 24, 1912.]

THE FLOOD-PREVENTION CONFERENCE.

The National Flood Prevention and River Regulation Conference set for January 6 and 7 should challenge the interest of every citizen of Louisiana and the greater area affected by the recurrent overflow of the Mississippi River. This meeting will bring together a good many of those who believe that the right way to attack the problem presented by the river is to begin at the headwaters and prevent floods, instead of taking hold at the bottom of the valley and trying to dam the floods as they sweep down. Those who advocate this course are opposed in political as well as in engineering policy to those who cleave to the present scheme of levee administration.

The cost of controlling the flow of great rivers is stupendous. So also are the damages continuously arising from failure to control their flow. The engineering problem which the process involves is tremendous and largely undeveloped. So also were the technical problems which beset the men who spanned the continent with railroads, irrigated the dry lands of the West, drove a plexus of rails through the rock beneath New York, tunneled the Hudson River, and severed the Isthmus of Panama. All these processes have resulted, and are expected to result, in gigantic benefits and profits, overwhelming even their own enormous costs. So also would the control of the great river which drains the continent between the Appalachians and the Rockies.

Not only would this stop the millions of dollars of loss sustained every year from high water on the Mississippi and its tributaries, and the tens on tens of millions of values destroyed now and again when high flood stages are attained, but it would also, say its advocates, fertilize and fructify great dry, barren areas now awaiting the waters which they propose to impound.

The proposals here outlined are given concrete shape in a bill now pending in both Houses of Congress. This was prepared by Senator Newlands, one of the comparatively few men in Congress with the breadth and depth of real statecraft. Congressman Bartholdt, of Missouri, presented it in the House. The opponents of the plan it embraces call it a lunatic fancy. The very charitable among them say it is impracticable. These are precisely the same things which have been said about every large enterprise which the mind of man has conceived since man has had a mind. Sometimes they delay the consummation of great conceptions, but they never prevented the realization of a single one. Soon or late Newland's plan of river control, or some modification of it, will rule the streams of the United States, because the levees alone will not hold a flood that is constantly undermining them or climbing over them, or doing both.

The acceptance of any such plan as this would mean the transfer of all control of the levees and all responsibility for them to the Federal Government, which is where their control belongs. This, however, is not a pleasant prospect for the numerous clans of levee patches whose maladministration of the levees in the States along the lower course of the river has been characterized by dissipation, waste, and graft. Those who are absolutely conscientious never attain efficiency because they lack the essentials of efficiency, and not all are either conscientious or capable. Whatever they attain or fail to attain is gained or lost at tremendous expense to a few States which ought not, in simple justice, to bear such a burden alone.

The people of New Orleans are more or less familiar with the old idea of river control. They have had the pleasure and profit of hearing Mr. Ransdell a number of times. The last occasion on which they heard him he addressed a large audience of them nearly two hours, after which another speaker presented the Newlands plan for 20 minutes, at the end of which the intelligent crowd indicated its very plain preference for the latter-day idea.

Our Representatives in Washington are now contending for a large appropriation of levees, with the enormous losses of this year's flood as their key to the country's consideration. We hope they get the money. Every little helps. The only way, however, to settle a question like this levee question is to settle it right. No amount of money piled into dikes will obviate the necessity of flood control. The higher they rise the harder they will fall when their foundations are scoured away.

Everybody in New Orleans has a pocketbook interest in the river and the levees. If you want to hear more about the proposals of Mr. Newlands, the objections to it, and the answers to them, you should attend the conference which is to be held next month.

[From the Times-Democrat, Wednesday, Jan. 8, 1913.]

RIVER REGULATION AND FLOOD PREVENTION.

While the conference held in this city for river regulation and flood prevention has not been as well attended as was expected, it has none the less accomplished its purpose of presenting to the people of Louisiana and the Southwest, properly and strongly, the river problems and issues involved, and it has made them better acquainted with the Newlands bill, which the conference is so warmly advocating. The meeting was held in New Orleans for this very reason, to acquaint the State and city with what the River Regulation Association proposes to do to bring about a broader and better study of the problems in their broadest sense and secure the cooperation of all who are interested in the regulation, control, and improvement of the Mississippi and its tributaries.

It is natural that the people living along the lower Mississippi should look at the question mainly or altogether from the standpoint of overflow, and that they should magnify the importance of levees, as this has been in the past the only way in which they have secured protection. To most of them the Mississippi and levees were regraded as one and the same problem. Latterly, even in this section, and especially after the experience of last year's floods, some doubts have arisen as to whether levees alone will assure us all the protection we need.

The conference in this city was for the purpose of calling attention to the other problems involved in river improvement, the use of reservoirs for retaining the flood, and thus preventing the freshet coming down in one gigantic wave; the use of water thus stored up to make the river navigable during low season; its utilization for irrigation purposes, and also for the production of water power.

All these points have been successfully presented in the speeches and resolutions. The plan of improvement urged has been launched before the community and will receive the consideration and study they deserve. The conference has also dwelt upon the importance of unity of interests and insisted that by cooperation, acting to gether in all matters affecting the regulation of the river, we are most likely to secure the appropriation and legislation desired. An earnest effort has been made to prove that the interests having at heart the construction of reservoirs, irrigation of lands, etc., were not inimical to the demands of the people along the lower river, were not opposed to levees or failed to recognize the part they play in any system of river regulation and improvement, and a number of changes and amendments have been proposed in the Newlands bill that will make it provide more liberally for the Mississippi south of St. Louis and for the construction of levees.

This, as we understand it, is what the conference was intended to accomplish—to present the question of river regulation more broadly than it has been presented before, to lead to the discussion of all theriver issues, of all the plans suggested, and to show how all interests are affected, with the confidence that only by such general discussion and interchange of views will it be possible to reach a definite conclusion as to what ought to be done to secure united action.

Never has a better occasion presented itself than the present to secure favorable action from Congress and to protect the lower Mississippi Valley from overflow. The country realizes that this heavy loss must be prevented in future; it can not stand it without serious injury; that the Federal Government is responsible for the care of the river and its protection from overflow and must assume charge and control, and those along the river—the States, levee districts, and people—are now unanimous in favor of surrendering to the Federal Government all control of the rivers, all obligations in the matter of levee construction and the prevention of overflows. If we do not get all we want now, it will be because we quarrel among ourselves and can not agree as to what we want done. The river regulation and flood prevention conference will, we believe, help to bring about an agreement by laying before the people of the lower valley many ideas and suggestions as to river improvement and regulation which have never been sufficiently considered here before.

[From the Daily Picayune, New Orleans, Wednesday, Jan. 8, 1913.]

THE IMPROVEMENT OF THE MISSISSIPPI RIVER AND THE PROTECTION OF THE VALLEY FROM FLOODS.

The bill proposed by United States Senator Newlands, of Nevada, for the regulation and control of the waters of the Mississippi River and its tributaries, which has been offered in Congress, was considered at a meeting of delegates, chiefly from Louisiana, yesterday at the hall of the Progressive Union in this city.

The bill in question has not specially commended itself to the people of this city because it proposes to disregard the methods that have been employed in this part of the country with a large measure of success in protecting the lowlands of this State from the river floods and have to a large extent been effective, and that is the building of levees. The people of this part of the country are confident that if the systematic protection of the river banks be added to the proper building of levees the problem of protection will be solved.

Senator Newlands's scheme, in brief, is to build dams on all the upper tributaries of the Mississippi River and store up the flood waters, only turning them loose gradually after the flood season had passed, and it was proposed that the entire burden of the work should be undertaken and maintained by the National Government. Such artificial lakes, established on the tributaries that have their rise in the Rocky Mountains and flow through the dry plains of the West, could furnish large quantities of water for irrigation; but the greatest part of our flood water comes from such eastern tributaries as the Ohio, the Tennessee, and Cumberland Rivers, and there is no need for irrigation in that region.

While the stored-up waters would cover large extents of land in West Virginia, Kentucky, and Tennessee, underlaid by coal and iron ore, the damage would be greater than the benefit. Moreover, it would cause the spending of all the public money in the highland States of the great valley and none in the lowlands. While this statement smacks of "pork-barrel" politics, there is at least some justice in the claim for a more equitable distribution of the money.

Moreover, what the Newlands bill proposed was a land-reclamation scheme that has no reference to the improving of the rivers for navigation. It is not at flood tide that the banks are undermined and the caving occurs, but in the season of low water. The protection of the banks from caving and establishing their permanance and ability to support the levees is the grand object in view, and when that shall be accomplished, as it can and should be, everything that can be desired will have been done to protect the lowlands from overflow, so that the work of drainage and reclamation can be carried to the utmost limits.

At the meeting on Monday a committee was appointed to revise the terms of the Newlands bill, and the committee most properly insisted that all the proposed work should be carried on under the direction of the Mississippi River Commission, a national body charged with the care of the river and the improvement of its navigation, as well as protection from floods, and the entire work should be under the supervision of that body. It was also insisted that an appropriation of $10,000,000 a year be devoted to the care of the river from St. Louis to the Gulf of Mexico. With such amendments added to it and incorporated in the body of the Newlands bill it can be made acceptable to our people and to assist in giving protection from floods to the southern lowlands and aiding in the development of the Mississippi Valley, besides improving the river as a channel for a great commerce. Then all interests will be promoted, and the protection and development of the lowlands of the Mississippi River will be established.

Mr. Newlands. Mr. President, I wish to add just a few words regarding the debate in which we have been participating for some days. What contentions have arisen during that time? First, the contention relating to the development of hydroelectric power near St. Paul, under the amendment introduced by the Senator from Minnesota [Mr. Nelson], and approved by the committee. The contention there was the same as the contention regarding the Connecticut River Dam. The only difference between the two cases was that in the case of the Connecticut River Dam it was constructed to serve the double purpose of navigation and the development of hydroelectric power by a private corporation acting under the authority both of the State and of the Nation, and it was sought to impose some charge upon the profits of the private corporation with a view to using the moneys thus received by the National Government in the promotion of navigation upon that river.

In the other case the dam was constructed by the National Government, but was to be constructed in such a way as to serve a double use, to serve the use for navigation and to serve the use for the development of hydroelectric power, a larger expenditure being acquired for the two uses than would be required simply for navigation. So the Government there was to impose a charge upon the corporation using the hydroelectric power compensatory in the shape of interest on the additional portion of the construction assignable to hydroelectric use.

Now, we had two contradictory votes, one striking out this charge as an invasion of State rights, the other approving the charge by the National Government as a reasonable charge for the extra expenditure made in meeting the requirements of the State.

I ask with reference to that specific matter, Is the time of the National Congress to be wasted year after year in taking up each one of these individual projects and dealing with it? Would it not be much wiser to have a board under whose general powers works could be undertaken covering both the use within the jurisdiction of the State and the use within the jurisdiction of the Nation under an apportionment of cost between them that will fairly distribute the burden?

Then we have another contention, a contention over the lower Mississippi River. We have there an Inland Waterways Commission, organized years ago, whose jurisdiction extended over the entire river. The jurisdiction there was so generally expressed as to embrace, in my judgment, not only the river itself but its tributaries.

Yet we found, as a matter of fact, the operations of that commission were confined to the lower reach of that river, from the Passes to Cairo. Later we extended its work as far up as Cape Girardeau, a total distance from the mouth of a thousand miles. The purpose of the amendment of the Senator from Missouri was to add nearly 500 miles to the area of its operations, so that they would extend up as high as Rock Island.

The Inland Waterways Commission is an example of cooperative action and illustrates the principle for which I contend regarding the entire waterway system. That commission was composed of three men belonging to the Engineer Corps of the Army and one representative of the Coast and Geodetic Survey, thus insuring the coordination of these two engineering forces, whose jurisdiction pertained to our rivers, but whose jurisdiction varied in character, and to these officials were added two engineers and a lawyer appointed from civil life, thus making up the seven members of the Mississippi River Commission.

So, in its very organization, it was a coordinated body, and in its work it was a cooperative body, for under the organic act of that commission, it was to cooperate with the States on the Mississippi River with a view to dovetailing river regulation and swamp-land reclamation and protection. Their operations have been cooperative ever since, the commission undertaking the dredging of the river, the bank revetment and protection to prevent caving banks, and undertaking, in cooperation with and through a division of expense with the States and levee districts, the construction of levees, which, it was held, were a part of the scheme of navigation as well as of swamp-land reclamation, the levees serving to keep the river within its channel and to prevent it from practically losing its channel by spreading over vast areas of swamp land.

That commission had an expenditure of about $3,000,000 a year, when it ought to have had the power to expend at least $10,000,000 a year between Cairo and the Passes, and while it has done much good work in cooperation with the States, the deficiency in its work has been the fruitful cause of enormous disaster to this great area of reclaimed land in five States—in itself an empire of unexampled productiveness. Every one of these overflows can be attributed to some deficiency in appropriation. We have gradually enlarged our vision upon this subject, and we are now expending $6,000,000 annually where formerly we expended $3,000,000.

Now, what was this area? An enormous area of swamp land, over which the Mississippi River was accustomed in the olden days to spread itself, composed of an inexhaustible soil, a soil equal in fertility to that of the Nile. That entire area came into the possession of the National Government through the Louisana purchase as a part of the national domain. At the very inception of that ownership and title, if these statesmen of that time could have read the future, they would have realized the folly of parting with that great domain to any sovereignty or any individual incapable of dealing with it in a big and comprehensive way.

Yet the United States, not realizing the value of that immense area, but realizing only the burden that might be imposed upon it by the construction of the works necessary to reclaim it, granted it to the States upon the condition they should reclaim it. The weak States threw their burden upon individuals, and so this domain fell in large areas into the hands of individuals who were incapable of dealing with it in the scientific way that would be required to increase its productiveness and make its production certain. So they have been at work in a feeble and ineffective way exhausting their resources for a century in the development of that great region, the work of one year being entirely destroyed by the flood of another, vast areas devastated, and large populations deprived of the resources of life.

We have attempted in a half-hearted ineffective way to recover the ground lost, and the National Government, not now the owner of this area, finds itself called upon to aid in its reclamation, and the question is as to the constitutional power of the Nation. We all know, of course, that the entire power of the Nation over navigable rivers arises from the commerce clause of the Constitution. The promotion of interstate transportation comes within the national powers, and so we have gradually built up a system there of cooperation between the Nation and the States with reference to that vast area, but a cooperation lacking sufficient funds, a cooperation lacking a sufficient area of operation; for instead of at the start regarding the Mississippi, with all its tributaries, the Ohio, the Cumberland, the Tennessee, and the Missouri, with all its tributaries, the Platte, and the Arkansas River, as a unit and undertaking the complete regulation and control of those waters from source to mouth in aid of navigation, with a view of checking the floods in such a way as to delay and spread out their operation over the regions below, the Nation took control only of the lower reaches of the river and waited for these enormous floods coming from nearly 30 States of the Union to gather in enormous volume in the Mississippi River below Cairo, and thence down it sought to restrain these floods after their accumulated force was directed against this unfortunate region, instead of harnessing the floods at their very source, arresting their flow to the regions below, and extending the flood season over a longer period, thus diminishing the crest of the flood and diminishing its destructive power.

Now, what can be done in the way of scientific arrest of these flood waters that fall during the spring and winter upon the Appalachian Mountains and the Allegheny Mountains on the east and upon the Rocky Mountains in the West, and on the whole intermediate region, and make their way through the small source streams and tributaries into the main river itself, receiving additional accumulations from the very region affected?

We have done nothing practically with reference to arresting those floods. Yet, if we would only arrest them, we could make them instrumentalities of benefaction instead of destruction. What benefaction can be secured from the arresting of the floods at or near that source? In the first place, in that Rocky Mountain region to the west of Kansas and Nebraska and Oklahoma, including parts of those States, we have a vast area of land that is thirsty for water every season of the year, and upon which it is impossible to raise profitable crops without artificial irrigation.

Mr. SIMMONS. Mr. President——

The PRESIDENT pro tempore. Does the Senator from Nevada yield to the Senator from North Carolina?

Mr. NEWLANDS. Certainly.

Mr. SIMMONS. Mr. President, I wish to make a suggestion to the Senator from Nevada, and I am sure the Senator will accept the suggestion in the spirit in which I make it. The Senator has offered this amendment to the river and harbor bill. The amendment is the subject of a bill introduced by the Senator some time ago in the Senate. That bill has been before the Committee on Commerce and has been reported and is now on the calendar.

The subject which the Senator is discussing is a very important and a very interesting one, and he is discussing it in a very lucid and interesting way; but it must be, I think, apparent to the Senator that the conditions here are not favorable to a real discussion and consideration of this subject. We are anxious to pass this bill to-day, if possible. The subject which the Senator suggests is one that ought to call for very extensive and very thorough and very full consideration. Senators naturally feel that the proposition which he makes is one that will change the policy of the Government in reference to the improvement of rivers and harbors, and if it were engrafted upon this bill it is probable the bill would be defeated and we would get the river and harbor bill, and the Senator would not get what he wants.

I was going to suggest to the Senator, in these conditions, in view of the great importance of the subject he is discussing, and the fact that his bill has been reported and is on the calendar, would it not be better that this discussion be postponed, and that at an early day we take this matter up as a separate proposition, a proposition involving a change in the policy of the Government with reference to appropriations for river and harbor improvements, and give it a thorough discussion? I do not think that conditions are now favorable to the discussion or the real consideration of the important matters which the Senator is suggesting to the Senate.

I merely wanted to make that suggestion to the Senator. I fully appreciate the importance of the matter he is discussing, and I am anxious that the Senate should take it up as a separate proposition and give it full discussion. I hope he will not insist upon it as an amendment to this bill and a discussion of the matter at this time, because I think it is a matter that ought to be thoroughly discussed as a separate proposition, not as an amendment to a bill, especially in view of the fact that the amendment the Senator proposes would change the whole policy of the bill. It is at variance with the policy of the bill, and if it were adopted it must be apparent to the Senator that it would defeat the bill, and defeat his amendment along with the bill.

Mr. **Newlands**. I am not insensible to the appeal the Senator makes to me. It is an appeal that has been made whenever I have addressed the Senate upon similar amendments proposed to the river and harbor bill.

Mr. **Simmons**. But, Mr. President, if the Senator will permit me, the Senator has never had his bill on the calendar, where it might be considered as a separate proposition, as is the case now.

Mr. **Newlands**. That is true; but it has been reported only recently and at a time when it can not possibly be considered. As I regard the amendment as entirely germane to the bill, I am disposed to urge it. At the same time I shall be very considerate with my colleagues, and I shall endeavor to close my remarks in time to secure a vote upon the bill before the time fixed for the memorial addresses. But I understand that the Senator from Connecticut [Mr. Brandegee] proposes to offer as an amendment the Connecticut River dam bill. I will ask him whether it will be possible to conclude the consideration of this bill before 2 o'clock?

Mr. **Borah**. The interrogatory was addressed to the Senator from Connecticut, but I will state, if the original Connecticut River bill is offered as an amendment, of course, it will not be possible to dispose of the bill to-day if there is any disposition to carry that amendment. If a Senator offers it for the purpose of offering it that is one thing, but if there is a disposition to put it on the bill, the bill will not be passed to-day.

Mr. **Brandegee**. My attention was diverted when the Senator from Nevada referred to the matter.

Mr. **Newlands**. I asked the Senator whether it was his intention to move as an amendment the Connecticut River dam bill?

Mr. **Brandegee**. The Senator from Ohio [Mr. Burton], I understand, gave notice last night that he would offer as an amendment to put the Connecticut River bill as it came from the committee on the river and harbor bill, and my colleague [Mr. McLean] intends to offer the bill as it was passed by the Senate as an amendment to the river and harbor bill. What would develop in the way of language in the way of those two propositions I do not know. My experience would lead me to expect some expression of views.

Mr. **Newlands**. So, it would not be possible to conclude the consideration of the bill to-day before 2 o'clock.

Mr. BRANDEGEE. That depends upon the staying qualities of long-distance talkers, and I can not guarantee anything about it.

Mr. NEWLANDS. I assume, then, the Senator does not intend to address the Senate upon his amendment.

Mr. BRANDEGEE. I would a great deal rather have a vote on it in quiet, because I should think it would be perfectly acceptable to the Senate to accept what it had already accepted. But if anyone objects, then I would like to answer him if he makes any points that I think need answering.

Mr. NEWLANDS. We shall doubtless hear from the Senator as we heard from him during that debate.

Mr. THOMAS. Mr. President——

The PRESIDENT pro tempore. Does the Senator from Nevada yield to the Senator from Colorado?

Mr. NEWLANDS. Certainly.

Mr. THOMAS. As I understand the situation, the Senator from Ohio [Mr. Burton] proposes to offer the original Connecticut River bill as an amendment to the pending measure, and the Senator from Connecticut will offer as an amendment that bill as it was finally adopted by the Senate. The offer by the Senator from Ohio will certainly develop some language.

Mr. NEWLANDS. I therefore see——

Mr. MYERS. Will the Senator yield to me?

Mr. NEWLANDS. Certainly.

Mr. MYERS. I am in favor of the amendment offered by the Senator from Nevada, and I hope he will go ahead and address the Senate on it and bring it to a vote. I have learned that the time to press a bill here is when one gets a chance to press it.

Mr. NEWLANDS. Mr. President, it does not seem probable, therefore, that we can reach a conclusion on this bill to-day, and I shall go on with my presentation of this subject.

I will state, in reference to the appeal of the Senator from North Carolina, it has been an appeal that has been made upon every occasion when I have presented the river-regulation bill in the shape of an amendment to the river and harbor bill. I have been compelled to present it as an amendment to the river and harbor bill because it is impossible to get for it serious consideration by the Committee on Commerce, the members of which are so bent on securing appropriations for individual projects that they have not time to consider a broad and comprehensive measure that will deal with this subject in such a way as to relieve Congress of a large portion of its burdens and at the same time secure enlightened administration of river and harbor development.

Mr. CLARKE of Arkansas. Mr. President, I submit a parliamentary inquiry.

The PRESIDENT pro tempore. The Senator will state it.

Mr. CLARKE of Arkansas. The Senator from Nevada having indicated that it is his purpose to debate this matter at length, even to the extent of delaying the passage of the bill to-day, that presents a question of duty to those of us who are interested in its passage. His amendment is not in order. He is proceeding outside of the rules of the Senate.

Mr. NEWLANDS. Mr. President, I do not yield to the Senator from Arkansas.

Mr. **Clarke** of Arkansas. He is trespassing upon the courtesy of those interested in the passage of the bill, and I think the time has arrived——

Mr. **Newlands**. Mr. President, I decline to yield.

Mr. **Clarke** of Arkansas. It is not a question of the Senator yielding to me. I am on my feet in my own right to make a perfectly proper point and to call attention to the fact that the Senator from Nevada is not addressing the Senate otherwise than by courtesy. There is no proposition pending that can be made at this time. His amendment never was referred to the Committee on Commerce.

Mr. **Newlands**. I deny the right of the Senator to take me off the floor.

Mr. **Clarke** of Arkansas. Except for parliamentary purposes and within the rules of the Senate.

Mr. **Newlands**. I am discussing the bill in its general aspects.

The **President** pro tempore. The Senator from Nevada will suspend for a moment. The Senator from Arkansas has made the point of order that the amendment is obnoxious to the rule. The Chair, without expressing an opinion on that point at present, will suggest that the Senator from Nevada can not be taken from the floor in the midst of a speech on a point of order. The Senator from Nevada will proceed.

Mr. **Newlands**. Mr. President, I was remarking that the Committee on Commerce has been so busy in considering the individual projects of the individual members of that committee that it has had no time to devote to the consideration of a broad and comprehensive measure, even though that measure would lighten their own labors and would more efficiently accomplish the purposes which they have in view.

We passed through the same condition regarding the reclamation act. I entered Congress, in the lower House, over 20 years ago. For 10 years there we insisted upon it that the great work of reclamation of our arid lands should be taken up as a national enterprise by the Government in the development of its public demain. We sought there that, as a matter of river and harbor development, we should secure in the upper reaches of these great rivers the storage of waters, which would serve the double purpose of arresting the floods and of leading them over arid wastes, thus turning them into regions of productiveness. It was only by a constant iteration and reiteration, by amendments offered, by speeches made, by attacks made upon the very vitals of the river and harbor bill itself, that we securing a hearing before the great American people, which resulted in the passage of the reclamation act—an inestimable boon to the entire intermountain region. Had it not been for the aggressive course which we took with reference to this very bill in its annual course we would have made no headway whatever in that legislation so essential to the welfare of some 15 States.

Mr. President, we are renewing the struggle that we then commenced, insisting upon it that the great and destructive agencies in the lower reaches of the river are the floods, and that the only proper way to deal with those floods is not only to protect the channel below, to protect the banks by revetment, to construct levees, but also in this vast watershed, covering 30 States, to arrest the flood waters, so as to put them to beneficial use.

We are renewing to-day the very argument that we made 20 years ago, not, as then, out of a selfish regard for the advancement and welfare of our section, but as a means of developing every interest in the Union, the development of waterway transportation as an aid to railway transportation and to our ocean transportation, and the development of the rivers, in the development of water transportation in such a way as to put them to every beneficial use that civilization affords. We, however, will get no hearing unless we finally take the very position which we then took with reference to the Reclamation Service, that we would hamstring the river and harbor bills until the claims of the region which we represented were recognized. No sectional interest now controls our views or our action. We are now working for the entire Union. We believe that there should be an efficient development of our waterways, such as there is in France and in Germany, so that inland waterway transportation and ocean transportation and rail transportation should be so coordinated and dovetailed together as to aid and promote both domestic and foreign commerce. So far as I am concerned, I intend to press this subject upon the attention of the Senate at every convenient moment.

The Senator has remarked that the bill which I have introduced has been reported by the Committee on Commerce. I admit that that bill has gradually gained converts there. The Senator from Ohio [Mr. Burton] was a qualified convert. He signed our Inland Waterways Commission report as the chairman of the commission. He indorsed in that report every principle for which I have contended in this bill, yet, for some reason or other, I have not his hearty cooperation in the passage of the bill. He has doubtless intended to amend the existing methods in order to accomplish the result which he has in view, but I am sure he has become hopeless regarding existing methods, for you find him here in the Senate the opponent of every river and harbor bill that comes in, instead of its advocate, as he was in the House of Representatives. The chairman of this committee [Mr. Nelson] is another convert. I can recall the time when the chairman of the committee resented the idea of turning over what he regarded as the functions of Congress to an administrative board, but he has now finally come to the conclusion that the functions of Congress are best exercised by the creation of a board acting as its servant in the scientific adjustment of these questions.

Only the other day he declared in committee—I made the statement the other day, and the Senator corroborated me—that he was tired of this piecemeal system of appropriation that has existed for so many years; that he was conscious it is full of abuses and is characterized by absolute inefficiency in many cases; and that, so far as he was concerned, he was for the creation of a board, to which large powers should be given, and to the prosecution of whose work an ample fund should be appropriated.

There are other converts upon that committee, but they are differing all the time as to details. If you should put it to the vote ot that committee to-day as to the essential principles of this bill, I believe that it would have the votes of a large majority of that committee. They always differ as to details here and there, as to the segregation of this fund, as to whether it should be segregated at all between different waterways, or as to the proportion that should be segregated to this watershed and to that watershed; as to who shall compose the board; as to what its powers shall be; but whilst they agree upon the essentials as to a board, as to a large fund, as to continuous work, as to covering all the related uses of the river, covering cooperation with the States, they differ as to the details of the organization through which its work is to be effected. It will take a long time to concentrate the mind of that committee, as it will take a long time to concentrate the mind of Congress, upon a feasible and practicable method of administration. Therefore the friends of this measure must press it at every convenient opportunity. That is the reason why I am pressing it now. All the various amendments to the bill have been considered in detail; this amendment is reserved to the last.

Now, the appeal is made to me when I am presenting this matter to the consideration of the Senate that this bill contains large appropriations for needed work and that its passage may be imperiled if I should continue to debate this important question. I wish to be considerate always of the views and the demands and the requirements of my associates, but I do not think that it is my duty now to limit my discussion.

Mr. President, I was discussing the Mississippi River and its tributaries; I was referring to the use of this water for irrigation above. The practice of irrigation still is in its infancy. The time will come when irrigation will be universal throughout the entire Mississippi Valley, for nature, unfortunately, does not distribute the waters at such time in their fall from the heavens as to meet the scientific requirements of agriculture.

There is not a region in the entire Mississippi Valley, I do not care what its waterfall is, in which there are not periods of drought, periods in which growth is arrested, periods in which growth is sometimes destroyed. Why should we allow these productive waters, falling upon this vast area, to rush into the Gulf, where they will be unutilized, when by arresting their flow throughout the entire region, whenever it is practicable as an engineering matter to do it, we can hold those waters under control, available not only for irrigation but for the development of water power.

Electricity is made with water power—a most valuable factor in the lives of our people. Electricity has more to do with the general comfort and convenience of the masses of the people of to-day than has almost any other force. It is used for lighting; it will be used for heating; it is used for power. It can be carried into the humblest cottage and made there the instrumentaility of production. Why should we allow these waters, which can be put to those beneficial purposes above, to drift down to the destruction of vast areas below? Why do we permit them to sink into the Gulf of Mexico and into the Atlantic and Pacific Oceans without any productive results? All of this, of course, requires cooperation, and for a hundred years we have been debating as to where was the dividing line between the jurisdiction of the Nation and the State, as if it were utterly impossible for these sovereigns to deal with each other. We have no difficulty in dealing with Canada upon matters relating to our waters;

we have no difficulty in dealing with any foreign country; we have ambassadors and ministers through whom negotiations can be conducted; but we seem to have the greatest difficulties in dealing with sovereign States, component parts of the great Union that constitutes our Government. It never seems to have occurred to us that by the organization of a national board, empowered to deal with similar organizations in the States, we could, instead of debating endlessly as to the dividing line between National and State jurisdiction, bring them into partnership, so as to produce beneficial results to both classes of sovereigns existing upon the same soil.

So we have gone along in this ineffective, inefficient, and dribbling way, identifying the greatest constructive work of the country with the spoils system; turning over these individual projects, practically, to individual Members of Congress for their initiative; denying in every river and harbor bill itself the poor privilege to the Corps of Engneers of the Army of making a suggestion to make this system efficient. That seems an extraordinary statement. I recall that I was condemning the Engineer Corps of the Army for its lack of initiative, for its lack of suggestion. I thought that that corps had been in charge of the rivers and harbors of the country for a long period; that they ought to have framed and submitted to Congress an efficient method of administration, but to my surprise an eminent officer of the Engineer Corps of the Army pointed me to specific legislation in the river and harbor bill absolutely preventing them from making any such suggestion outside of the immediate matter intrusted to them for report. So we hamstrung our own servants, our own engineers, our own experts, and denied them the poor privilege of giving us advice.

It is hardly necessary to inquire what agency there was back of all this, of which agency Congress was the unconscious servant. We know that the railroads of this country for 40 years have been going through a period of phenomenal development, almost ahead of the requirements of the areas which they cover. They have been pioneers of civilization, reaching out in advance of the population, and hence greedy for freight; and so they have looked with hostility upon every waterway enterprise that affected any part of that which they regarded as their legitimate service. The great enemy of waterway transportation has been the railway systems of the country, with the instrumentalities of which only of late years has the transportation of the country caught up. They are not so hostile now, because they have enough business and many of them more business than they can handle, and so we do not find their hostility displayed to this great policy in as intense a manner as it was years ago. We find some broad-minded men among them even insisting upon the development of waterway transportation as supplemental to railway transportation; but to a large element, imbued with the old traditions, waterway transportation is the enemy of rail transportation and must be discouraged and suppressed. So they have permitted the development of our rivers, provided they were developed in such a way as not to make them efficient instrumentalities of transportation.

Take the entire region upon which most of the money has been spent between Cairo and New Orleans. Has there been any effort made in the prosecution of the development of that enormous waterway to develop it as efficiently as you would a railway? Would we think of constructing a railway without a terminal? Would we think of constructing a railway without a sidetrack? Would we think of constructing a railway without the station houses, freight sheds, and so forth, that accompany a great transportation system? Yet we have been planning the restoration of our rivers and waterways and not paying any attention whatever to transfer facilities, to terminals, to the freight establishments, and to cooperation, above all things, with the railways, so as to make both the railway and the waterway efficient public servants.

I apprehend the reason that we have such a defective system of river development is the fact that all the way along there has been a discouragement in the line of making the rivers effective for transportation. How is it in Germany? There the waterway is just as efficient as the railway; there the waterway is protected and developed by the Government just as perfectly as the railway; connections with the railways are provided, and every stopping place upon the river is developed in such a way and with such facilities for the transfer of freight and passengers as to promote their highest efficiency. So Germany has developed a system of railway transportation and waterway transportation and ocean transportation, all coordinating with each other as an efficient and scientific system of transportation, whilst we have allowed the waterway development of our country simply to drift into the protection of cultivable areas. You will find the appeal made by southern Representatives in Congress to-day not so much in the interest of navigation as in the interest of large areas of cultivable lands which are threatened with destruction.

They are claiming now that it is the duty of the Nation to take care of the waters that fall upon the Nation's watershed and prevent those waters from taking their accustomed course. How is it the duty of the Nation? These waters from time immemorial have spread over the entire delta of the Mississippi. When we took them they were swamp lands, and how is it our obligation to turn them into cultivable lands?

It would have been our obligation had we maintained the ownership of that region; it would have been our duty as the owner and the proprietor of those estates to prepare them for settlement; but we parted with the ownership; we turned them over to the States, and threw upon the States the burden of reclamation. How is it our duty, then, to take care of their reclamation? It is not our duty, and yet I regret to say that our southern statesmen have made that practically our primary duty. I have heard little suggestion from the statesmen of the lower Mississippi River region regarding the efficient development of those waterways in aid of transportation, with transfer facilities and sidings and terminals and all the paraphernalia that belongs to a complete waterway transportation.

Proceedings of February 24, 1913.

RIVER AND HARBOR BILL.

The Senate, as in Committee of the Whole, resumed the consideration of the bill (H. R. 28180) making appropriations for the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes.

The PRESIDENT pro tempore. The question is on the amendment submitted by the Senator from Nevada [Mr. Newlands].

Mr. LODGE. Mr. President, on that amendment I desire to make a point of order. The amendment involves a policy of great magnitude and commits the Government to an expenditure of some $500,000,000, which seems to me to be a large amount, although I may appear to be a person of contracted ideas in saying so. Certainly it is general legislation, pure and simple, and I make the point of order against it.

The PRESIDENT pro tempore. The Senator from Massachusetts makes the point of order that the amendment proposed by the Senator from Nevada is general legislation. The Chair sustains the point of order.

Mr. NEWLANDS. Mr. President, with reference to what amendment was that made?

The PRESIDENT pro tempore. The Senator's amendment, which was submitted on Saturday last.

Mr. NEWLANDS. I did not hear the motion of the Senator from Massachusetts. May I inquire what it was?

The PRESIDENT pro tempore. The Senator from Massachusetts made a point of order that the amendment is general legislation on an appropriation bill, and the Chair sustains the point of order.

Mr. NEWLANDS. Mr. President, I shall speak generally regarding the pending bill, in continuation of my remarks of last Saturday.

The debate which progressed between the representatives of the three lower States on the Mississippi River—Louisiana, Mississippi, and Arkansas—and the representatives of the upper States—Illinois, Iowa, and Missouri—indicates how inefficient is the system of river development under which we are now and have been for years working.

What was the contention? The representatives of the lower Mississippi States succeeded some years ago in securing the organization of the Mississippi River Commission. That commission was composed of three engineers of the Engineer Corps of the Army, the Chief of the Coast and Geodetic Survey, a lawyer and two civil engineers appointed by the President, thus furnishing an example of the coordination of services called for by the amendment for which I have been contending and called for by the river-regulation bill, which I have been urging in Congress every since 1907.

The representatives from the lower Mississippi then realized the necessity of relying not simply on the Engineer Corps of the Army but of bringing in cooperation with that corps the Chief of the Coast and Geodetic Survey, having jurisdiction over a part of the inland waterways of the country, and also the cooperation from the outside of noted civil engineers and the aid of a lawyer of distinction.

How did they secure the creation of that Mississippi River Commission? By making it a commission for the lower Mississippi alone? No. The act creating the Mississippi River Commission is broad and comprehensive in its terms, and embraces the entire Mississippi River from source to mouth, including, as I believe, if it is properly and liberally construed, all the tributaries of the Mississippi River. Even at that time there seems to have been some conception of the view now generally entertained upon this subject—that a river from source to mouth, with all its tributaries, is to be treated as a unit. So the Mississippi River Commission was created with the assent and by the cooperation of all the representatives from the States of the Mississippi Valley, and in its very terms its operations were to be as broad and comprehensive as are the reaches of that vast river and all its tributaries.

How has it been reduced by practical administration? By practical administration, through the contracting powers of a River and Harbor Committee in the other House, controlled for many years by one of the ablest men in that body in the line of the contraction of its operations, instead of the expansion of its operations—a gentleman, now a distinguished Member of this body; a gentleman whose views are broad, but whose action is narrow in actual operation and work—the operations under that Mississippi River Commission were practically contracted at first to a region from Cairo to the mouth of the river, a stretch of only a thousand miles, when the entire Mississippi River, with all its tributaries, embraces a distance, I believe, of between ten and fifteen thousand miles.

So we found that whilst the original bill was broad in its terms, embracing, under a liberal construction, the entire Mississippi River with its tributaries as a unit, the practical operation and administration was confined to the lower reaches of the river, 1,000 miles in length. Even there insufficient appropriations were made, $3,000,000 a year, which it was expected in a period of 20 years would secure the entire protection of the region on both sides of that river from destructive overflows and secure the maintenance of its channel.

Think of the smallness of the operation under that act! That region had been the victim for years of devastating floods. It was reasonable to expect that those floods would perennially recur; those floods inflicting enormous damage upon the cultivable area, reaching from $10,000,000 to $75,000,000,000 in a given year. Instead of Congress, under the inspiration of the River and Harbor Committee of the other House, taking the broad action that would result in the immediate appropriation and application within a short period of time of $50,000,000 or $60,000,000, required for the protection of the banks in the way of revetment or protection from overflow in the way of levees, with the cooperation of the States and adjoining districts, Congress took the risk in a single year of destruction from overflow amounting to the entire expenditure contemplated in a period of 20 years; and this the River and Harbor Committee of the House called economy—this confining of its appropriations to $3,000,000 annually, and subjecting that vast area to the danger of an annual loss of from $10,000,000 to $75,000,000! Then they restricted the expenditure to that area.

Were there no other areas that demanded attention? Was not the region between Cairo and Cape Girardeau requiring protection? That actual area of operations under the act was later on extended, but I do not think the amount of the appropriation was very largely increased; it was extended upon the assumption that it was idle to raise the levees below, when between Cairo and Cape Girardeau the banks were unprotected and an overflow extending back of the levee would sweep over the entire intermediate country between that region and the Passes, including Arkansas, Mississippi, and Louisiana, and thus force the way of the Mississippi through devious passes and bypaths to the Gulf, instead of through one deep, well-protected, and well-regulated channel. So they added on the space between Cairo and Cape Girardeau a space of a few hundred miles; and now when the region above Cape Girardeau, comprising parts of the great, wealthy, and highly populated States of Missouri, Illinois, and Iowa and insist that they have problems of equal importance, problems of the same character, involving not only the regulation of the channel for navigation, but also the maintenance of the river within its banks through bank protection and levee building, the Representatives from the States below conduct here a wordy warfare against the claims of their brethren above, and insist that the legislation which the latter propose involves almost a spoliation of the lower region of the river. Finally this region of several hundred miles above is put off in this bill with a small appropriation, I believe of $75,000 or $100,000.

Mr. PERCY. Two hundred thousand dollars.

Mr. NEWLANDS. Two hundred thousand dollars, with a view to investigation—investigation after a hundred years of experience!

How has it been with the Missouri River? Although the terms of the Mississippi River Commission act, in my judgment, embraced the Missouri as a tributary of the Mississippi, it was thought wise to organize a Missouri River Commission some years ago, and that commission was authorized to proceed by bank revetment and levee protection to control the fitful and eccentric Missouri River, passing for 300 miles between St. Louis and Kansas City through a valley of incomparable richness and alluvial soil, which melts like sugar from the impact of the flood waters and then makes its variable course through that valley, stretching from east to west, to-day diverted north, to-morrow south, the next day so eccentric in its course that the farm 10 miles away from the course of that river to-day may, as the result of flood to-morrow, be absolutely swept away by the invading waters, a vast principality of incomparable wealth and productiveness, if protected.

What was done with the Missouri River Commission? Under the inspiration of the contracted policy—broad in view, but narrow in action—maintained by the River and Harbor Committee of the House of Representatives for so many years and followed by the Commerce Committee of the Senate, after that commission had vindicated the necessity for its existence and the success of its work by revetting the banks on the Missouri River between Jefferson City and the junction of the Missouri with the Mississippi, after they had practically demonstrated for a distance of 60 miles in the most dangerous part of that entire valley the absolute success of the revetment system—which consists of weaving willow mats and then sinking them upon the sloping banks by imposing stone upon them, and thus preventing the washing away of the banks in time of flood—after they had proved the absolute success of that system, a success demonstrated to-day after many years of cessation of effort by the entire integrity of the banks of the Missouri River at that point, the operations of the Missouri River Commission were ended by act of Congress and the commission was dissolved.

I do not question the conscientiousness of the Senators and the Representatives who took part in that movement. They were doubtless impelled by motives of economy. Many of them felt, perhaps, that river regulation itself was dead and that all this work ought to be undertaken by the riparian proprietors in the interest of their lands. Many of them evidently thought that it would be practically impossible to control the stream; but if you want to find the hidden and directing force behind the movement, to which Congress unconsciously was obedient, you will find it in the fact that there are four railroads, two on each side of the Missouri River, paralleling its banks from Kansas City down to its junction with the Mississippi River. Those railroads were hostile to the water carrier. The effect of the very existence of a possible water carrier was felt in the diminution of rates. The effect of a successful water carriage could, in their judgment, hardly be measured; and so, reaching out for freight, public opinion was influenced through the newspapers and unconsciously directed to a few mistaken considerations of economy, possibly to a mistaken consideration of the hopelessness of the work, and, finally, to the abandonment of that great enterprise. So the Mississippi River Commission, narrowed in its operation to the region below Cape Girardeau, remained, and the Missouri River Commission went out of existence.

During all that time who were the men who were urging the continuance of the Mississippi River Commission and of the enlargement of its powers and of its operations? The Representatives from the Southern States, from the States of the lower Mississippi Valley, almost all of them strict adherents of the doctrine of State rights; almost all of them opposed to the extension of the power of the Federal Government, opposed to the enlargement of those powers, and favoring a strict construction and a narrow exercise of the powers granted. Yet they insisted upon the interstate-commerce power of the Nation being exercised in such a way as effectually to regulate and control that river from Cape Girardeau down. They insisted upon it upon the ground that under the interstate-commerce power the Nation had a clear right to regulate that river, and that it was its clear duty.

What did the exercise of the interstate-commerce power mean? It meant the advancement of transportation. That it what it meant. It did not mean simply the protection of the lands in private ownership adjoining a great river. That might be provided for as incidental to the work of transportation, but the main purpose was transportation, and the only legitimate purpose under which the National Government's power could be invoked. Yet were the Representatives from that region exceedingly solicitous for the advancement of transportation or was their real purpose the protection of their lands?

They have secured the protection of their lands, inadequate though I admit it to be; but what have they done for the advancement of transportation? I have served on the Commerce Committee, and I know from conversation with some of the members of the committee from that region that some of them are skeptical about ever restoring transportation upon the river. Yet they are voting, nominally under the commerce clause of the Constitution, for the expenditure of these large sums of money, but really reaching their hands into the Federal Treasury for an unconstitutional purpose, if we apply the moneys to that purpose alone. The appropriations are justified, so far as they are national appropriations, only by the advancement of transportation.

What does transportation mean upon the Mississippi River? Does it mean simply the deepening of the channel? Does it mean simply bank protection? Does it mean simply levee protection? Or does it mean the construction of a waterway as they construct a waterway in Germany, with a proper channel, with a proper protection of the stream so as to maintain its flow, and with transfer facilities and terminal facilities and instrumentalities of coordination and cooperation with rail carriage and ocean carriage? Clearly the latter. You might as well develop a railway by scattered developments here and there, the construction of 10 miles here and the construction of 5 miles there, without any connection, or the construction of a railway without terminals, without sidetracks, without station houses, without freight houses, as to construct a waterway and pay attention only to its channel and its banks.

Go to Germany and you will find every river highly artificialized and canalized, all of them connected with each other by purely artificial channels, and at every station, corresponding to our railway stations, you will find public facilities provided by the Government for the transportation of freight from car to boat, for the storage of freight, and for the economical and rapid handling of the freight. Not only have they done that, but they have made their water fronts perfect, not only in utility but in beauty, by making them the most attractive parts of their municipalities.

We condemn our water fronts to hideousness, we dedicate them to ugliness and to inutility, whilst Germany creates a union of beauty and utility upon its water fronts, furnishing a lesson to this enterprising country. There they protect the waterway, and they do not allow one public servant to be destroyed and sandbagged by another public servant, as we do in this country. They define the relations between the different waterways in such a way as to promote the interests of both waterways and railways, to make them cooperate as public servants, instead of permitting them to engage in a deadly antagonism and warfare with each other, leading to the destruction of one or the other.

What effort has been made by the representatives from the lower Mississippi, who demand from us action upon this great subject, and who insist that it is the duty of the Nation to protect them from the accustomed flow of waters which nature has for centuries precipitated upon them—what have they done, what have they suggested in the way of a development of transportation, which is the real function of the National Government? I may be mistaken, but I have found no adequate suggestion from the representatives from that region as to the development of the facilities for transportation.

Mr. SHEPPARD. Mr. President, will the Senator yield for a question?

The PRESIDENT pro tempore. Does the Senator from Nevada yield to the Senator from Texas?

Mr. NEWLANDS. Certainly.

Mr. SHEPPARD. Does the Mississippi River Commission act, in the Senator's opinion, embrace all the tributaries of the Mississippi?

Mr. NEWLANDS. In my judgment, it does. It is sufficiently broad in its terms, liberally construed; but it has been narrowed down in its operation to this area on the lower Mississippi. I wish to say that I have no hostility whatever to this enterprise on the lower Mississippi. On the contrary, I have been its consistent friend. A year ago, when the floods broke out, I insisted upon having the appropriation increased from $3,000,000 to $10,000,000, instead of a mere $6,000,000. What I object to is the narrowness of view of the representatives of the lower Mississippi who seek in this bill to narrow the operations of the Mississippi River Commission, and who have refused—or at all events have failed—to present to us a vast, connected scheme of river development that will enable the National Government to carry out its true function of developing interstate transportation.

Mr. PERCY. Mr. President, will the Senator yield to me for a moment?

Mr. NEWLANDS. I will.

Mr. PERCY. Unintentionally, I am sure, the remarks of the Senator from Nevada would convey the impression that nothing has been done by the Mississippi River Commission in aid of navigation or for the purpose of benefiting navigation upon the Mississippi River. The last report made by that commission shows that they now maintain a channel of about 9½ feet at low water from Cairo to the Gulf; that at the lowest stage of the Mississippi River boats drawing 9½ feet can pass from Cairo to the Gulf. This is a distinct and marked improvement within the past few years, due solely to the work of that commission.

Again, speaking of terminal and dock facilities, the city of New Orleans provides the best inland dock facilities belonging entirely to the city and used for the benefit of the public of any city in the United States. That more has not been done in the way of providing terminal facilities might very well be attributed to the amount that has been appropriated. There never has been an appropriation made that has been adequate to carry out the aims and the recommendations and the work mapped out by the Mississippi River Commission. The kind of work of which the Senator speaks, in providing adequate facilities up and down that tremendous river, would call for an appropriation for that river alone of almost the amount suggested in his amendment—$50,000,000—for the rivers of the United States.

Mr. NEWLANDS. Mr. President, I am not complaining of the operations of the Mississippi River Commission within the limited appropriations granted that commission by Congress. I am simply adverting to the fact that the representatives of that entire region in Congress have been devoting themselves in their legislation more to the protection of their lands from overflow than to the promotion of transportation. While New Orleans has done excellent work in the preparation of docks, designed, I believe, not only for river but for ocean traffic, it certainly has not gone far enough; and one has only to sail, as I have, from Cairo down to New Orleans and witness the decaying wharves and the inadequate transfer and terminal facilities all along the line, the evident domination over the transportation of that region by the railroad companies, to realize that the powers of the National Government have not been adequately invoked in the carrying out of its great function of promoting interstate transportation.

Mr. KENYON. Mr. President——

The PRESIDENT pro tempore. Does the Senator from Nevada yield to the Senator from Iowa?

Mr. NEWLANDS. Certainly.

Mr. KENYON. I am very much in harmony with the view which is being expressed by the Senator, and I wish there were some way of reaching it. Does the Senator believe that as long as river and harbor bills of this character, constructed as this bill is evidently constructed, are passed by Congress his plan will ever receive serious consideration?

Mr. NEWLANDS. I am afraid not. I am beginning to be afraid not. I have been endeavoring to promote a system that, without interfering at all with the appropriations in the river and harbor bill, would gradually bring about appropriations under the river-regulation bill which I have offered in such a way as to make the work of the old dovetail in with the work of the new and result in an enormous enlargement of the old work. But everywhere I find myself opposed by the representatives of the very region most to be benefited, fearful lest some great policy may be inaugurated that will temporarily imperil the appropriations which they have. I have nothing of that kind in view.

Mr. KENYON. Why is not the quickest way to bring about this result, then, to defeat measures of this kind just as often as they come up?

Mr. NEWLANDS. Mr. President, I am exceedingly reluctant, so far as I am concerned, to take such action. I have served on the Commerce Committee. I do not contend that the expenditures provided for by this bill are improper expenditures. I have no doubt most of them are necessary. I know this expenditure for the Mississippi River is necessary and ought to be enlarged. I would not, in order to obtain a greater good, temporarily arrest or endanger the work in which these gentlemen are interested. What I protest against is their inertia, their unwillingness to receive new ideas, their unwillingness to take the entire Nation within the scope of their vision. What I complain of is that they view only that distance of a thousand miles from Cairo to the Passes without taking into consideration the great and broad question of interstate transportation involved in the regulation of interstate commerce.

Mr. KENYON. I wish the Senator, before he closes, would illuminate the subject of just how the river and harbor bill is formulated. I have watched it for a good many years outside of Congress and have watched the fight in the House of the present Senator from Ohio [Mr. Burton] against the extravagances of the river and harbor bill.

For instance, here are appropriations for a large number of creeks at different places. Here is an appropriation for Toms River, in New Jersey. How do we ascertain that a thousand dollars is going to help the navigation of Toms River? Here is an appropriation of $1,500 for Fishing Creek, N. C. How do we determine whether that appropriation is for navigation or to make the creek really what its name implies? I might make the same inquiry as to Swift Creek, in North Carolina, for which $500 is appropriated. How does the Committee on Commerce ascertain that these appropriations for creeks all over the country are to help navigation?

I wish the Senator would touch upon that matter before he sits down.

Mr. NEWLANDS. I will state to the Senator that the action of the Government upon the questions to which he refers is much more logical than would appear from the terms of these appropriations. It is true that there are appropriations in this bill for creeks upon the Atlantic coast; but it will be found that many of the so-called creeks are inlets or arms of the sea and that the appropriation involves the removal of bars or other obstructions to navigation that will enable the coasting trade to reach farther into the interior. I do not say that all of them are justified, but I have no doubt most of them are.

I will state to the Senator the process by which this is done. The initiative is with the Member of Congress, who introduces in the first place a bill for a survey, and has it put upon the river and harbor bill, if he is successful in inducing the committee to believe that it is necessary and proper. That bill involves a preliminary survey by the Engineer Corps of the Army. They report upon it, and if it requires further examination and further expenditures they so report and a further expenditure is made. Before any enterprise is finally entered upon, I believe, these recommendations go to the board of review in the Engineer Corps of the Army, composed of very highly educated and very capable men, and they pass upon the feasibility of the project and its relation to commerce, and report. If they report favorably, they report the amount necessary in a written report to Congress, and then Congress, if it concludes to act favorably, makes such appropriation as it deems advisable, usually the amount called for by the engineers.

In the improvement of all those methods the country owes the greatest obligation to the Senator from Ohio [Mr. Burton], who was for many years the chairman of the Rivers and Harbors Committee of the House, and who pursued one uniform and consistent course of insistence that this whole matter should be taken out of the spoils system which had previously existed and be put upon the merit system, the merit of each project being considered by competent engineers. The methods have been vastly improved under the leadership of the Senator from Ohio. My only complaint of the policy which he pursued was that, in my judgment, it was not of sufficient expansion. I can not call it a policy of contraction. The expenditures did steadily decrease, but it was not a policy of sufficient expansion which would take into view all the waterways of the country and make a study of them from source to mouth with a view to making them efficient intrumentalities for transportation, and incidentally making them useful for every purpose to which civilization could put them, thus uniting the related uses with the principal use, the exercise of which alone belonged to Congress, making projects feasible which would otherwise not be feasible, and producing wealth from the development of these uses that would be largely compensatory of the cost in perfecting them.

That is what I complain of. And I complain of the representatives of the lower Mississippi, of their narrowness of view in not realizing that this is a Union of States, that all these rivers are interstate, that their successful development does not depend simply upon the bank protection and levee building of the lower reaches of the Mississippi River, but it depends upon taking a broad and comprehensive view of the entire Mississippi River and its tributaries, and by constructing works in the upper reaches of these rivers and their tributaries useful in a compensatory way for irrigation, for water-power development, and by the raising of levees in the lower reaches with a view to swamp-land reclamation, turning these waters from instrumentalities of destruction into instrumentalities of benefaction. That is the policy, and the policy alone, which will make the Mississippi River with all its tributaries an efficient instrumentality of interstate commerce.

I have referred to the contest between the representatives of the lower Mississippi and the representatives of the middle Mississippi River which we have seen. We saw another contest. The construction of levees upon the Arkansas side of the Mississippi River narrowed the stream and necessarily raised the heights of the flood, and as result the city of Memphis was threatened and much injury was done. An overflow which, according to the Senator from Tennessee [Mr. Webb], threatened the health of that region, injured its commerce and its production and overflowed valuable portions of the city; and the city of Memphis is to-day considering methods that will save it from these destructive results.

An amendment was offered by the Senator from Tennessee [Mr. Webb] to this bill, providing for cooperation between the Mississippi River Commission and the authorities of Memphis, so that by joint plans and works the great work, which is of so great benefit to Arkansas, can be conducted in a way that will not be injurious to its neighboring State of Tennessee or its neighboring city of Memphis. A point of order is made on it here by the representative of the neighboring State of Arkansas, and this amendment goes out of the bill at the very time when Memphis is planning and when the exigency of the situation demands cooperation in plans and work.

Mr. President, we of the intermountain region have some interest in this matter. My own State unfortunately has none, because my State is in a great basin bounded on one side by the Rocky Mountains and on the other by the Sierra Madre Mountains, and having no streams which form tributaries of a great navigable river. That great basin, consisting of the State of Nevada and parts of Idaho, Utah. and Arizona, has streams, it is true, which take their sources in the mountains, but those streams sink into great lakes in the desert, where the waters serve no use except to satisfy the thirst of the sun. Our problem there is a purely domestic problem of arresting these waters upon the way to these great salt sinks and storing and diverting them over the arid land and making it fruitful of production.

But there are portions of that great trans-Missouri region which are tributary to navigable rivers—the great State of Montana to the Missouri River and its tributaries, the State of Wyoming, the State of Colorado, the States of North and South Dakota, the western parts of Kansas and Nebraska and Oklahoma, all of them semiarid in character, tributary to the Mississippi River system—and they have an interest in the regulation of that river. They do not want to see all their waters go to the Gulf in a rapid and uninterrupted flow, bringing destruction to their neighbors below. They want them diverted above and applied to the public lands of which the Nation is the proprietor in such a way as to prepare them for settlement and made useful there primarily for irrigation, and, secondarily, for the development of water power, and made useful in such a way that the water percolating through that soil gradually makes its way back to the main or tributary stream and helps to swell the flow of the Mississippi River at the period when it is most needed for navigation—the low-water period, the period of drought.

Then in that intermediate region, humid in character, not requiring the artificial use of water except for the highest purposes of intensified cultivation, they are interested in the development of water power. Right on the Mississippi River between Cairo and St. Louis there is a point, according to the testimony of the eminent engineer, Mr. Cooley, of Chicago, where a dam can be constructed that will develop 800,000 horsepower. Think of it; 800,000 horsepower will produce, $30 annually each horsepower, $24,000,000 annually. In our country we regard a horsepower as worth between two and three hundred dollars, and the annual revenue from it we rate at from $30 to $60.

So we have on the upper Mississippi a proposal in Minnesota embraced in this bill, in a casual and sporadic way, where they propose to put up a structure for navigation which will develop by a little extra expenditure an enormous water power—hydroelectric power. Thus this amendment proposes practically what is called for by my river-regulation bill—cooperation between the Nation on the one hand and the State of Minnesota upon the other.

We find here and there throughout our legislation practical instances of this cooperation which I desire to see entered upon as a general scheme of legislation working automatically under adequate appropriation, under the guidance of a board of expert engineers.

Then we have on the Connecticut River another similar project which it is sought to put upon this bill, involving practical cooperation between the State of Connecticut and the United States. Yet is Connecticut the only State that is interested? Not at all. The Connecticut River takes its source in Vermont and New Hampshire, flows through parts of those States, through the State of Massachusetts, and through the State of Connecticut. Every one of those States is just as vitally interested in the full and complete and comprehensive development of the Connecticut River as is the State of Connecticut. Yet so narrow and contracted is our vision that we are embracing only a scheme of cooperation between Connecticut and the United States, leaving out of view entirely the States above.

Three years ago I was invited by the Board of Trade of Springfield to address them upon this question, and I found them immensely interested in the development of the Connecticut River, first, because they have been dependent upon it for the development of water power, and they wanted its development; and, secondly, because they had been interested in the question of transportation, and they found in their way to the Sound railroad bridges and dams and various intervening structures, and they wished the Connecticut River opened up as an arm of the sea away up in the interior of Massachusetts, a great manufacturing region. They were insisting that this obstruction should be swept away and that the Nation should regard the Connecticut River as a national asset, so far as commerce is concerned. and as an asset of each one of the States, so far as their domestic uses were concerned. They were insisting upon the union of the powers and the functions and the jurisdictions of all these sovereignties in work that would advance the public interest, each acting within its powers and within its jurisdiction, neither invading the jurisdiction of the other, but engaging in teamwork as individuals would do when they stand in a similar relation with each other. We find practically that measure doomed to defeat. In the shape in which it passed the Senate it will be vetoed by the President if he remains firm in the conviction which he has hitherto expressed. We have practically doomed that beneficial measure to defeat, a measure of cooperation between the Union and the State, simply because the agency which we have selected to carry out our national uses and the agency which the State of Connecticut has selected to carry out its domestic uses in the development of that water, acting both as the agent of the Nation and the States, expressed its willingness in this measure to pay a certain portion of its profits into a fund for the improvement of the navigation of the Connecticut River.

The Senators from the southern reaches of the Mississippi who have for years been gaining these appropriations from the National Government, not large enough in my judgment, ostensibly with a view to promoting transportation but really with a view of protecting private lands, vote against and defeat the only practical method of bringing the United States and the State of Connecticut into cooperative action with reference to a structure in that river, designed not only for the purposes of navigation under the jurisdiction of the United States but for the development of water power under the jurisdiction of the State.

Now, I have indicated how we of the intermountain States—though my individual State is not—are interested in the Mississippi Valley. How is it with the Pacific coast? There we have two or three great drainage areas, the drainage area of the Columbia River, with its tributary streams draining through the States of Oregon, Washington, Idaho, and Montana, away into the interior; the waters from the western parts of Idaho and the western part of Montana draining into the Pacific, while those of the eastern parts drain into the Mississippi River and into the Gulf. Ought not those four States to be brought in to cooperation with the United States in a system of related development, producing teamwork that will result not only in the promotion of navigation but in the extension of irrigation and the development of water power and the reclamation of swamp lands? Yet we have no machinery in order to accomplish that.

Then take the next great drainage area, that of the San Francisco Bay, which you see upon the map, the drainage area extending north and south, a distance of nearly 500 miles drained by the Sacramento River running from the north and by the San Joaquin River running from the south, both of them uniting near the Bay of San Francisco, emptying their united waters into the bay, and those waters emptying through a narrow gorge called the Golden Gate, into the great ocean of the Pacific, an area of incomparable fertility, an area of incomparable productiveness, the soil and the climate of which promise the most valuable products—the grape, the citrus fruits; all the high-priced products. One-half of that drainage area of 500 miles, the northern half, has sufficient water for cultivation. The lower half has an insufficient supply, a large portion of it being devoted to aridity and requiring irrigation. There we have those two rivers, capable of being developed to the highest degree as the instrumentalities of transportation, and yet their development delayed in the past by the influence of the great railway interests there. That vast region, 500 miles long and 100 miles wide, composed of this fertile area, is doomed to fitful production—to insufficient production—to absolute aridity in some places.

What does a scientific treatment involve there? A treatment of the arid lands above, a treatment of the swamp lands below, resembling those of the Mississippi Valley, and the development for interstate commerce. Why, of course, the development of that large area involves cooperation of the different sovereignties having jurisdiction, the cooperation of the Nation with the States, and the cooperation of both with private owners, who have simply private interests to serve, and yet the development of which interests would vastly advance the wealth and porsperity of the country. Shall we not provide a system of cooperation between these great interests that will involve not only the development of transportation from one end of the valley to the other but also involve the development of irrigation of the arid lands and the reclamation of the swamp lands, for recollect that there the floods of these rivers constitute the same destructive agency that they do in the Mississippi Valley and the waters which are stored and developed for irrigation and water power in the course of nature become engines of destruction to the regions below?

Why, Mr. President, not an ounce of water should be permitted to flow into San Francisco Bay and out through the Golden Gate until it has served every useful purpose to which it can be put; and it is perfectly possible, by canals along the foothills, to bring almost every acre of that vast valley, north and south, under the productive influences of an ample water supply, with the accompanying development of water power unexampled throughout the world.

Then as you go down the Pacific coast there is the Colorado River, emptying into the Gulf of California, taking its source in Colorado, flowing through the southern part of Nevada and the northern part of Arizona and through the southern part of California, a river capable of an enormous development of water power, a stream capable of such conservation all along the line as to develop every civilized use and of development in such a way as to finally promote the conduct of the river over the most fertile alluvial deposits on these vast plains of Arizona and California in the south that are now doomed to aridity.

In some cases, through the strenuous effort of individual proprietors, the waters have been diverted. You have heard of the Great Imperial Valley, in the southern part of California, fed by a ditch taken from the Colorado River, and led into Mexico, and then out from Mexico to the north into this Imperial Valley, which at one time was below the level of the sea, and at one time was an arm of the sea. I should probably surprise you if I were to give you the statistics—I have them not at hand—regarding the production of that valley, conducted under conditions of exceptional danger, threatened every year by the enormous floods that come from the north and which ought to be utilized there for both water power and irrigation.

Is not that a national problem? Is it not an international problem? For recollect that the contour of the country is such as to absolutely compel the conduct of water, diverted in Arizona for this valley in California, through that portion of Mexico called Lower California, into the southern portion of the State of California.

Mr. SHEPPARD. Mr. President——

The PRESIDING OFFICER (Mr. Curtis in the chair). Does the Senator from Nevada yield to the Senator from Texas?

Mr. NEWLANDS. I do.

Mr. SHEPPARD. Mr. President, the Red River of the South is also capable of development along the lines suggested by the Senator from Nevada, and especially in Oklahoma and in northern and northwestern Texas.

Mr. NEWLANDS. I have no doubt of it, and yet the Senator from Texas will recall that there was some sarcastic comment the other day regarding the Red River because a certain work has been done upon the Red River for a number of years, and not in such an effectual way as to promote navigation; but the difficulty is that it has been insufficiently done, inadequately done. There has been such construction, as I have already said, that we would have in the case of a railroad where we would build a detached section here and there of 10 or 15 miles.

Mr. SHEPPARD. I will say that $3,000,000——

The PRESIDING OFFICER. Does the Senator from Nevada yield to the Senator from Texas ?

Mr. NEWLANDS. Yes.

Mr. SHEPPARD. Three million dollars have been expended on the river, but the expenditure has been scattered throughout 30 or 40 years, and it has been given to the river in driblets of $100,000 and $200,000 each year. Consequently, it has been impossible to develop the river in a satisfactory manner, and the stream ought not to be indicted in the eyes of the public because it is not navigable or navigated.

Mr. NEWLANDS. Mr. President, the Senator from Texas is quite right. It is the inadequacy of the system, the inadequacy of the plans, that is responsible for the failure of the promotion of transportation upon that river. Yet, if this inadequate work goes on, unless the people along those rivers enlarge their vision and take in the whole Union, unless they stop simply asking for individual appropriations for individual projects here and there, after 30 or 40 or 50 years of unsuccessful effort in promoting transportation, the Nation will abandon the work altogether, and thus these very Representatives of those regions, holding on tenaciously to the present system of individual projects, will find themselves the victims of that system.

Mr. SHEPPARD. Mr. President——

The PRESIDING OFFICER. Does the Senator from Nevada yield to the Senator from Texas,

Mr. NEWLANDS. I do.

Mr. SHEPPARD. I had rather see the work on the Red River abandoned altogether than to have it continued in the present unsatisfactory and unscientific manner.

Mr. NEWLAND. I think the Senator speaks wisely and patriotically in that utterance.

Now, what have we got to face? We have got to face an expenditure of $50,000,000 annually; but men hold up their hands at the thought of expending $50,000,000 annually in the development of our rivers. The public servants of this country called the railways are expending from half a billion to a billion dollars annually for railways. Of course, those enterprises are being conducted as private enterprises, but they really constitute a public burden, because they are conducting them as public servants, and the public must pay the interest upon the investment in rates for freight and for fares. The great Government of the United States, having charge of the waterways and jurisdiction over them, and solely responsible for making them efficient instrumentalities for transportation, stands aghast at the expenditure of $50,000,000 annually in perfecting this system when private interests expend from five hundred millions to a billion dollars annually in the development of our railways. Yet, think how our expenditures have increased under the present inefficient system.

The river and harbor bill here carries $40,000,000, a very large portion of it, it is true, dévoted to harbors. In my judgment these developments ought to be absolutely divided into separate bills. They have no particular relation to each other. Our harbors relate to foreign commerce in the main, while our rivers relater to interstate commerce. The method of their development is entirely different, and we should not have in the public eye the expenditures made upon our harbors regarded as a portion of the burden which they are called upon to assume for the development of our rivers. We ought to know just how much we are expending for our rivers and we ought to have them in a separate bill.

I have presented a statement to the Senate containing a segregation of these expenditures in this bill, and we find that about $17,000,000 is allotted to harbors and about $23,000,000 to rivers. I have also had those expenditures subdivided according to the different waterway systems so that you can see how much expenditure there is in each watershed; and we find that, of the $23,000,000, $15,000,000 is being spent now on the Mississippi River and its tributaries.' My bill for river regulation involves the expenditure of $50.000,000 annually, of which one-tenth, or about $5,000,000, goes to the rivers—not the harbors—of the Atlantic coast; $5,000,000 to the rivers of the Gulf Coast, exclusive of the Mississippi River; $25,000,000 to the entire Mississippi River and all its tributaries, divided up, $10,000,000 to the Mississippi River below Cairo, $5,000,000 to the Ohio, $5,000,000 to the Missouri, $5,000,000 to the upper Mississippi; and then about one-fifth, or $10,000,000, for all the waterways finding their way to the Pacific Ocean.

We are already spending under our present inefficient system $23,000,000, and this river-regulation bill which I have proposed, embracing every drainage area in the country, involves only $50,000,000, but it involves that expenditure continuously for a period of 10 years; so that the coordinated scientific and engineering services of the country having anything to do with water may enter upon large and comprehensive plans involving every watershed in the country, with a certainty that $500,000,000 will be available in 10 years; and to that $500,000,000 spent by the Nation at least $500,000,000 will be added by the respective States and by private interests in the development of the uses of water related to that of navigation; so that between the two we will practically have in the next 10 years a billion dollars spent in the development of the greatest of national assets, the water of the country, for every beneficial use.

If we can with our present revenues stand the expenditure of $23,000,000 annually, can we not with the increasing wealth and population of the country, and the increasing revenue of the country, stand $27,000,000 more during the next 10 years? If our present sources of revenue are not sufficient, can we not by the paltry tax of one-quarter of 1 per cent upon the incomes of the country raise $25,000,000 in addition to that which we already expend upon our rivers?

One-quarter of 1 per cent, I say, upon the incomes of the wealth of the country, for the statisticians of the country have estimated that a tax of 1 per cent will produce $100,000,000 annually. Can not the great wealth of the country sustain this great enterprise that is to advance the wealth of the country—that is, to increase the productive energy of every section of our country and increase not only its productiveness but its facilities for transportation and diminish largely the present cost of living and the present cost of operation? Thus we will not only increase production but diminish operating expense.

Can not our great Nation undertake a work that Germany has been conducting ever since it became an empire and, with remarkable consecutiveness and continuity of purpose, a work that France has been pursuing for over a century, so that to-day you can go by water through related and connected waterways, through the artificialized waterways connecting the natural rivers, from almost any part of Germany to any other part of Germany, and from almost any part of France to any other part of France?

Mr. President, I published the other day resolutions which have been passed by State legislatures in favor of this river regulation bill, resolutions that have been passed by the chambers of commerce and boards of trade from Philadelphia to San Francisco, utterances of great conventions held for the conservation of our natural resources, great conventions held for the development of waterways, for the development of forests, and for other purposes; resolutions passed unanimously by the governors of all the States in conference assembled at the White House, utterances of the public press from one end of the country to the other, demanding big plans, big works, big expenditures, and a consecutive policy. Yet Congress had lagged behind. Congress necessarily is always behind public opinion. It should be. Its action is the reflection of a public opinion already created. It rarely creates public opinion. It is exceedingly slow to yield to public opinion, not because it is hostile to public opinion, but because it wishes rightly to know in what direction public opinion points.

Is there any need of our waiting longer? If all conventions are convinced, if State legislatures are convinced, if both parties, as indicated by their platforms, are convinced, if the magazines of the country are convinced, if the newspapers of the country are convinced, is it necessary that we should wait longer in order to ascertain what public opinion is upon this subject?

Mr. HITCHCOCK. Mr. President——

The PRESIDING OFFICER. Does the Senator from Nevada yield to the Senator from Nebraska?

Mr. NEWLANDS. Certainly.

Mr. HITCHCOCK. I desire to say, as bearing out what the Senator from Nevada has stated, that I believe there is a growing sentiment, particularly in my region of the country, in favor of some systematic plan such as the Senator proposes.

I hold in my hand a resolution passed by the Senate of the State of Nebraska last week, which I shall present to-morrow at the proper time, urging the Government to pay more attention to and make proper appropriations for conserving such watersheds as there are in the State of Nebraska, particularly with a view to the impounding of waters for irrigation purposes, so that they may not only serve the lands in Nebraska but may be prevented from becoming a cause of danger to the lands upon the lower rivers in seasons of flood.

While this applies only to Nebraska I believe it illustrates a growing sentiment all over the country that there is some connection between the impounding and use of waters for irrigation purposes and thus preventing that same water from becoming a cause of danger when seasons of flood arise.

Mr. NEWLANDS. I may say that public opinion is made up upon that subject. You can not read a single one of the popular magazines without finding some reference to this subject, all favorable to it. You can not find a political convention that meets that declares against it, and all of the national conventions have declared for it. You can not find a convention met together for any public purpose to-day without finding some expression relating to the necessity of big plans and works in the development of the water assets of the country. All this is intensified by the declaration of the representative governors of the various States, who, in the resolution which I presented to the Senate the other day, expressed an intense conviction upon this subject.

I have here two editorials which have recently come into my hands which I should like to have inserted in the record—one from the New England Homestead, a great agricultural magazine devoted to the farming interests of the New England country, and the other from Southern Farming, a magazine published at Atlanta, Ga.

The PRESIDING OFFICER. Without objection, it is so ordered.

Mr. NEWLANDS. I will read only a few lines. The New England Homestead says:

> The legal, ethical, moral, political, economic, and social justice to all the people all the time of Federal control of navigable interstate streams is absolutely unquestionable. It should be passed upon as a finality by the Supreme Court.
>
> The Windsor Locks dam bill probably will not be acted upon in the House before Congress adjourns March 4. This is just as well. It will give the new administration the full duty of setting forth its policy toward conservation. Certain it is that the American people will permit no backward step whereby their priceless heritage of flowing waters and of forests and mines in the public domain shall continue to be exploited by the few at the expense of the many for not only present but future generations.
>
> Meanwhile the action of the Federal Senate makes it doubly imperative that each State legislature take prompt and adequate action to wisely conserve the public welfare within the limits of the respective States, regarding the utilization of all forms of natural resources within the respective States.

Here let me say that in numerous States of the Union there are waterway commissions, conservation commissions, and similar organizations already created under the force of this movement, with a view to cooperation with the National Government. Of course, it is utterly impossible to enter upon any scheme of development of our waterways without the consent and the participation of the National Government.

So, also, Southern Farming has an article entitled: "Harness the Mississippi River System." This paper is published at Atlanta, Ga. The heading continues:

> How the Nation can do it—Benefits to every State—The hydroelectric Trust brought to its knees—No conflict between Nation and State—A revolution in railroad and water transportation—Marvelous developments in sight for the people, not the trusts—The South may thus prevent disastrous floods—May promote drainage of wet lands, irrigation of dry lands—Each State is aided in developing its water powers and other resources—How every Southern State may cooperate with Nation in this wise development.

The matter referred to is, in full, as follows:

[From the New England Homestead, Feb. 22, 1913.]

GOOD AND BAD ACTION BY THE UNITED STATES SENATE IN THE WINDSOR LOCKS DAM BILL.

All persons engaged in the business of transmitting hydroelectric power between the States are common carriers subject to the Interstate Commerce Commission. The Borah amendment to this effect was unanimously adopted by the United States Senate February 17, when it passed the Windsor Locks dam bill.

The Jones amendment was also adopted without objection. It provides that the franchise shall be forfeited if the Connecticut River Co. shall in any way become a part of a combination in the form of an unlawful trust or enter into any contract or conspiracy in restrain of trade.

The Cummins amendment was adopted, striking out the provisions providing for compensation upon termination of franchise. In place thereof was substituted language to the effect that the Federal Government should take over the property at the end of 50 years.

The two amendments first named are excellent. They will doubtless be incorporated in all Federal water-power franchises hereafter. They are right in line with all that the New England Homestead has been fighting for.

The Senate went dead wrong in voting, 74 to 12, to sarike out from the bill the provision that the Federal Government may impose a reasonable charge for the use of the water power in this navigable stream. It is this provision that expresses the principle of Federal control over navigable waters and Federal conservation of all natural resources owned or controlled by the National Government. This principle is the right one. It must and shall prevail. The opposition to it is based on a misconcention of State rights.

The water in the Connecticut River from New Hampshire, Vermont, and Massachusetts, under this States-right theory, has no "right" to overflow the river's banks and do damage in the State of Connecticut. The Mississippi has no "right" to break the levees and do vast damage by flooding the valuable lands of Mississippi and Louisiana. How absurd such a contention!

The legal, ethical, moral, political, economic, and social justice to all the people all the time of Federal control of navigable interstate streams is absolutely unquestionable. It should be passed upon as a finality by the Supreme Court.

The Windsor Locks Dam bill probably will not be acted upon in the House before Congress adjourns March 4. This is just as well. It will give the new administration the full duty of setting forth its policy toward conservation. Certain it is that the American people will permit no backward step whereby their priceless heritage of flowing waters and of forests and mines in the public domain shall continue to be exploited by the few at the expense of the many, for not only present but of future generations.

Meanwhile the action of the Federal Senate makes it doubly imperative that each State legislature take prompt and adequate action to wisely conserve the public welfare within the limits of the respective States regarding the utilization of all forms of natural resources within the respective States.

[From Southern Farming, Feb. 8, 1913.]

WATER POWER AND THE PUBLIC—HARNESS THE MISSISSIPPI RIVER SYSTEM—HOW THE NATION CAN DO IT—BENEFITS TO EVERY STATE—THE HYDROELECTRIC TRUST BROUGHT TO ITS KNEES—NO CONFLICT BETWEEN NATION AND STATE—A REVOLUTION IN RAILROAD AND WATER TRANSPORTATION—MARVELOUS DEVELOPMENTS IN SIGHT FOR THE PEOPLE, NOT THE TRUSTS—THE SOUTH MAY THUS PREVENT DISASTROUS FLOOD—MAY PROMOTE DRAINAGE OF WET LAND, IRRIGATION OF DRY LANDS—EACH STATE IS AIDED IN DEVELOPING ITS WATER POWERS AND OTHER RESOURSES—HOW EVERY SOUTHERN STATE MAY COOPERATE WITH NATION IN THIS WISE DEVELOPMENT.

[By Herbert Myric, president Orange Judd Co.]

[Interests allied with the so-called Hydroelectric Trust already monopolize too much of the water powers of the United States. During the past year these interests have sought to get control of the power in the Connecticut River at Windsor Locks, Conn. They propose to enlarge the old dam there, so as to generate more power. In doing this navigation would be made pssible by a canal and locks around the dam.

[At first the trust wanted to "swipe the whole thing." When the scheme was relentlessly exposed by the Orange Judd's eastern weekly, the New England Homestead, the trust began to modify its demands. It finally agreed to build the lock and canal at a cost of nearly $500,000 and forever maintain the same for free navigation. For the desired privilege the trust agrees to pay whatever rental the Federal Government may impose for the use of the water of this navigable stream.

[Finding that there was danger of opposition to the bill in Congress from extreme States' rights advocates, the trust now apparently agrees not to attempt to issue stocks or bonds in excess of the actual cash investment. It agrees to be satisfied with 8 per cent thereon. It agrees that any profits above that reasonable figure shall be shared with the Government in increasing ratio.

[Thus for the first time in American history it looks like the people's interests are adequately safeguarded and a precedent established that should forever insure that policy. To make assurance doubly sure, I have advocated that no loophole be left for a twilight zone between Nation and State by so amending the bill that the State reserve full supervision over the corporation, including the right to expropriate its property when the State wishes to assume a monopoly of the generation and distribution of water power.

[In a letter to Hon. John H. Bankhead, Senator from Alabama, who with other Senators, including Mr. Nelson, of Minnesota, oppose the measure from an extreme view of State rights, I wrote, Jan. 27, 1913, as follows:]

NO CONFLICT BETWEEN STATE AND NATION.

There is no necessary conflict in hydroelectric development between Nation and State. Let them cooperate under a definite plan, and in the course of one or two decades you will see a development of hydroelectric energy, with corresponding material prosperity and progress in civilization, transcending the imagination. Each State has everything to gain and absolutely nothing to lose through such cooperation.

Take the whole Mississippi River system, for instance. So far as it is navigable the Nation owns its bed and its waters; above the navigable point the Nation also has rights, but in no case may any of these rights be exercised to the detriment of any State.

OUR PLAN— ONE AUTHORITY.

The utilization of the flowing waters of the Mississippi system in the interest of all the people all the time may be attained only under national control of the main arteries.

Under such undivided authority one comprehensive plan will make it possible to store up the flood waters in the head reaches and thus prevent disastrous floods which now annually occure over vast sections of many States.

The stored water, after generating power, will be available for irrigation, or that power may pump water upon areas not otherwise irrigable, or may pump water away from irrigated lands not threatened by oversaturation.

The stored waters, transformed into electric energy or white coal, will furnish heat, light, and power at low cost for every purpose. But those low prices will be sufficient to pay for maintenance and extensions, interest, and sinking fund. After the construction expense thus shall have been met, prices may be still further reduced.

This is in marked contrast to the present saturnalia of overcapitalization practiced by the Water-Power Trust, whereby it seeks to fasten upon the people for all time charges for hydroelectric energy sufficient to support "securities" representing from two to five times the actual cost of the development.

MAKE WATER PAY FOR IT ALL.

The revenue from the publicly-owned power plants would be sufficient to vastly improve the navigability of every river in the Grand Basin.

In periods of drought the stored flood waters would be let out to maintain navigation and sanitary flushing of the river-drainage system.

On the other hand, by preventing floods the problem is vastly simplified of draining the present great extent of marshes and swamps.

TRULY A NATIONAL PROBLEM.

Thus the problem is national in every respect.

It directly and vitally concerns every State between New England and California, especially every Southern State, the central West, and the Northwest.

Each and all may profit hugely by the carrying out of this policy along lines of broadest patriotism, constructive engineeering, honest financiering, and economical administration.

A SELF-SUPPORTING PROPOSITION.

By this national system for the national development of our flowing waters the whole situation is transformed.

Instead of squandering vast appropriations in inefficient work upon river and harbor improvement we will now make the flowing waters earn money enough to efficiently utilize the unrivaled possibilities of our rivers as sources of power, heat, and light, as well as of transportation, irrigation, and drainage.

No longer will floods harass and destroy.

No more will alternate drought and flood menace the health or the wealth of our people.

And the Hydroelectric Trust no longer will have the public at its mercy.

EACH STATE AIDED.

And the beauty of such national policy is that without infringing upon the rights or duties of any sovereign State it becomes possible for each State likewise to encourage the development of the hydroelectric resources in the many smaller rivers within the respective States.

I would go further and have each State own and control, develop, and operate the flowing waters therein. Public ownership of waterworks by cities and towns has long been successful. The application of the same policy to the States and upon interstate and navigable rivers to the Nation is a logical development.

Yet there are two sides to State versus corporate power plants. And if State or Nation will not itself develop its hydroelectric resources corporate capital should be encouraged so to do.

PREVENT A CONTINUANCE OF THE PRESENT SATURNALIA OF OVERCAPITALIZATION.

But right at this point we come squarely to the parting of the ways.

The so-called Hydroelectric Trust not only presumes to be more capable of developing water power, but by virtue thereof has assumed a sort of "divine right" to indulge in what I have termed a "veritable saturnalia of overcapitalization."

AND THAT'S JUST WHAT'S THE MATTER.

In this respect it is a contest on the part of the Hydroelectric Trust for untold millions of unearned profits.

While the people, the States, and the Nation wish to so protect their own interests that, after insuring a fair return upon the capital actually invested, our flowing waters shall ever be servants, and not masters, of the people.

This principle of limiting the issue of securities to the actual cash invested or of limiting the returns upon such capital to a reasonable figure and then dividing any excess profits with the public, seems to be established in the Windsor Locks Dam bill.

The same principle is enforced upon the Montana Power Co. in the franchise recently granted its transmission lines over public land for electrifying a western railroad. In other words, the Hydroelectric Trust admits defeat when it gets up against Uncle Sam.

OUR SOUTHERN STATES

will benefit even more than other regions. The Mississippi will no longer inundate vast reaches of valuable lands when this plan is carried out. The saving of life, health, and property, the insurance against floods, will alone equal a magnificent return upon the entire cost of the whole scheme of harnessing the mighty river.

RAILROAD TRANSFORMATION COMING.

Another economic development is coming, which vitally reenforces the fundamental wisdom of the above view:

Ere many years there will be at the mouth of every coal mine—anthracite, bituminous, or lignite—great producer-gas plants. The coal will be dumped directly into them, and the resulting energy, in the form of electric juice, will be transmitted by wire.

This will also revolutionize the whole problem of transportation by rail.

Having no more coal traffic, railroads and their terminals will be able to adequately care for the coming vast development of other traffic, without requiring enlargements and expenditures so great as to be impracticable.

THE PEOPLE'S INTERESTS CONSERVED.

Then the energy obtained from black coal will have to compete with energy from the flowing water. Thus the people for all time will be sure of getting power at reasonable cost.

The Coal Trust, which even the United States Supreme Court has not been able to break down, will have met its Waterloo.

The railroad problem will be much easier of settlement.

Agriculture, industry, and civilization will advance upon a scale commensurate with the resources and genius of the American people.

Mr. Newlands. I commend this article in a southern paper to the Representatives from the lower Mississippi, who have stood watch upon the meager appropriations given to them for that short reach, and whose vision as yet has not extended to such an enlargement of the Nation's operations regarding the waters of the country as to embrace the entire Nation.

I also wish to call attention to an article written by Mr. A. L. Crocker, who is the chief of the Minnesota water commission, a commission organized in that State not only for local work but for cooperation with the Nation in a full development of our waterways. I shall ask to insert this and some editorials I have here in the Record.

The Presiding Officer. Without objection, it is so ordered.

Mr. Newlands. I will simply read the heading, which indicates its subject:

"Waterways plan finally evolved. Scheme submitted for improvement of Mississippi from Minnesota to Gulf. Legislature urged to act. Argued Federal Government and States along river should cooperate to finance movement."

Mr. Crocker says in a forceful sentence:

> The cry is now going up in many directions that there must be cooperation between the Federal and State Governments to cure this evil, It must be done. It can't be neglected. The evil will grow worse and worse, and it has become unendurable.
>
> "But in curing the flood evil other and immense benefits follow. Health is promoted; a steady supply is furnished the water powers; and wherever navigation exists the stream regulation is of the highest importance. No State needs a State policy in managing its waters more than Minnesota, and yet its importance is not generally appreciated.

The matter referred to is in full, as follows:

[From the Minneapolis Journal, Feb. 3, 1913.]

STATE BLAMED FOR DAMAGE BY WATER—MISMANAGEMENT IS WORSE THAN THAT OF LANDS, SAYS A. L. CROCKER.

The State's loss by careless handling of State lands, estimated at more than $7,000,000 by Attorney General L. A. Smith, in a recent talk before a legislative committee, is exceeded by the damage from bad management of water, according to A. L. Crocker, of Minneapolis, chairman of the State waterways commission. "One of the State's mineral properties, which the State let go for a song, after being warned by the State geologist, is worth $12,000,000," said Mr. Crocker to-day. "What is true of State farm lands and State timber and State iron is also true of the State's asset, water, which New York pronounces the greatest in value next to the soil of the State.

"All over Europe, Canada, and in many of the States in this country, from Maine to California, the hitherto neglected asset, water, is now being actively considered. Minnesota has not started. It has no policy. At this session of the legislature one should be entered on. Here in Minnesota and all over the world the damage by floods has loomed into vast and ever-growing importance. Last year the loss in the lower Mississippi Valley was $100,000,000, and again this year another terrific flood is raging. The direct losses we read of do not cover the damage done, for the subsequent losses in short crops and the deterrent effect on capital seeking investment swell the total far higher. On the Ohio and Sacramento Rivers, and indeed all over the world, the annual loss from floods is collossal. Right here in Minnesota in 3 years out of 15 there was a $1,000,000 flood loss in the Minnesota Valley followed by a typhoid epidemic. Of the 50,000,000 acres comprised in Minnesota a vast area is swamp, which is rapidly being drained, and when drained there will be nothing to prevent the rapid run-off of the flood water followed by devastation and sickness and a lack of water for water power and navigation. In New York they estimate the annual loss from typhoid—which can be prevented by a State administration of its waters—at $8,000,000.

"By contrast the report comes from Budapest that remedial hydraulic measures instituted in Hungary increased the national wealth $487,000,000. The area drained by the Mississippi equals that of Austria, Germany, France, Holland, Italy, Spain, Portugal, Norway, and Great Britain combined, and when this area, 41 per cent of the United States, goes on a flood at one time no levees on the lower river can stand the strain. There must be an alternative, and the only one is that of impounding the flood waters at their source. *The cry is now going up in many directions there must be cooperation between the Federal and State Governments to cure this evil. It must be done.* It can't be neglected. The evil will grow worse and worse and it has become unendurable.

"But in curing the flood evil other and immense benefits follow. Health is promoted, a steady supply is furnished the water powers, and wherever navigation exists the stream regulation is of the highest importance. No State needs a State policy in managing its waters more than Minnesota, and yet its importance is not generally appreciated."

[From the St. Paul Pioneer Press, Feb. 27, 1911.]

WATERWAYS PLAN FINALLY EVOLVED—SCHEME SUBMITTED FOR IMPROVEMENT OF MISSISSIPPI FROM MINNESOTA TO GULF—LEGISLATURE URGED TO ACT—ARGUED FEDERAL GOVERNMENT AND STATES ALONG RIVER SHOULD COOPERATE TO FINANCE MOVEMENT.

To the Pioneer Press: In view of several partial statements which have appeared recently, and in view of the importance of the subject of State waterway and water-power legislation while this legislature is in session, I ask permission to make a further and fuller presentation of the subject than has yet appeared in print.

Gov. Eberhart has started a movement for the public benefit that should bring him lasting fame as its real and far-reaching merits shall appear. It is up to this legislature to see properly and grasp by legislation the great opportunities which offer themselves now, but which have in part escaped and which will rapidly disappear altogether and forever if not seized without further delay. That would be a calamity not only to the State of Minnesota, but to the entire Northwest and to the entire Mississippi Valley south of us.

IMPORTANCE OF MINNESOTA.

In this whole combination Minnesota occupies in importance that position which a keystone does to an arch. As our forests are cut off and our vast swamps are drained the sprinkle of disaster which already depresses the Minnesota Valley will become the raging storm, and the only way to cure permanently the flood evil is by replacing the natural swamp and timber sponges by artificial reservoirs to impound the floods of spring, releasing the gradually later. In doing this great water powers will be created, as will canals or cheap water roads over the State, free to the farmer and the manfacturer. This means redemption of the waste places of the States, the peopling of those portions now wilderness, an increase in land values, new towns, new electric roads gridironing the whole State until the 2,000,000 persons now dwelling in the State become, perhaps, twice that number.

WOULD DRAW MANUFACTURING.

These new water powers all over the State will inevitably draw manufacturing. The wool of Montana now passing through us to Boston should be stopped here, financed, manufactured, and distributed from here. Following the first steel plant, now under construction at Duluth, there should be others, and on the great water powers near there a host of secondary iron and steel manufactories should spring up.

The old theory of iron manufacturing has been that the ore went to the fuel, but the practice of taking Minnesota ore to Pennsylvania to the coal is now being reversed by reason of the cheap freights on the Great Lakes on coal coming to the ore district. Cheap water transportation on the Lakes is bringing the steel manufacturing to Minnesota, and the market for iron and steel is moving west and can be supplied cheaply from Minnesota.

This argument or cheap water carriage for the benefit of Minnesota I will now apply to the Mississippi River. The great storage of flood waters will increase the low-water navigation on the Mississippi River as far down as Keokuk, and according to good authorities as far as St. Louis. On high authority—a United States engineer of many years' experience on this end of the river—it is said, with the reservoirs possible of construction in Minnesota, a minimum water channel of 12 feet can be maintained down to Prescott, and if the same reservoir work is continued down, from 12½ to 15 feet low-water channel can be had. But dead low water exists for a short time only, and a much higher stage may be expected for much of the navigation season.

FREIGHT CARRIED ON RHINE.

What this may mean can be estimated when we consider that the Rhine, on a maximum depth of 9 feet, and from that to less than half that, carries annually 25,000,000 tons. Thus Minnesota is seen to occupy the unique stragetic position, the key, so to speak, to trade and manufacturing afforded by its location at the northwest corner formed by the Great Lakes water system to the east and the Mississippi River for 1,800 miles to the south.

And from this angle, from Minnesota, radiates he vast system of railroads over the great Northwest.

Such a combination of advantages is rare, if not unknown, in any other country. Neither the Northwest nor the Mississippi Valley has done more than begin to grow, and with the coming inevitable growth queenly Minnesota will come into her own, if only the lawmakers of this legislature see and act in accordance with the necessities of the movement.

WHAT CHICAGO HAS DONE.

From Chicago via the Illinois River to the Mississippi River near St. Louis and down to the Gulf an improved river is planned for a depth of from 14 to 20 feet. Chicago has spent $60,000,000 to build the upper end and the State of Illinois has amended its constitution and has bonded itself for $22,000,000 with which to carry on the work within its own borders.

SINISTER MOVEMENT SEEN.

Right here I want to call the attention of our legislature to a sinister movement, and one which is threatening and may strangle development in our great State, the Northwest, and the Mississippi Valley to the infinite loss of all, unless our present legislature acts to prevent it.

Just below Chicago on this great $60,000,000 canal an ostensible electric light company has got a grip that threatens that whole scheme of navigation from Chicago down. The State of Illinois is now in the midst of a life-and-death fight against this octopus, which nobody for a moment thinks is a genuine lighting company. Its control and animus is in Wall Street, and the same genius for evil is now seeking under cover, of course, to get hold of our Minnesota Valley and our high-dam water power between the cities of Minneapolis and St. Paul. It is a movement, smooth as oil and deadly as a viper, that should be scotched now by this legislature in the interest of the public welfare. No powers should be granted by this legislature or by Congress which in any way may obstruct what the State of Minnesota may want to do. This is ordinary common sense and business prudence and requires no argument.

DEVELOPMENT DEMANDED.

Coming back to the river and the deep-water channel from Chicago to the Gulf, the whole Mississippi Valley wants our end, from the Missouri River to Minneapolis and up through the State, developed to the utmost. I am now in correspondence with men of large affairs, covering the entire Mississippi Valley to the Gulf, who propose to form a united movement on the part of the Mississippi Valley States to work for a complete and harmonious channels improvement from the Gulf of Mexico up and into Minnesota, and I am receiving strong assurances of intelligent, sympathetic interest, a recognition of the sense and reasonableness of the plan, and a willingness and readiness to enter upon it.

WHAT IS INVOLVED.

Just a brief mention of what is involved. The work is naturally divided into three parts. From the mouth of the Missouri River, where a vast amount of sand and earth enters the Mississippi, for many hundred miles to Louisiana, where the deep, still water from the Gulf begins, the problem is one of bank dikes to prevent flood and a scouring and digging out of the sand bars which pile up between the long, deep pools. From the Missouri River to Minneapolis the river is gentle in its flow, having a fall of only about 7 inches to the mile, except at the two points where the earth's crust is broken, making rapids at Keokuk and Rock Island. The extremes between flood and low water on this river are only 20 feet apart, while on the Ohio River they are 70 feet. With the channel once fenced in by lock and wing dams and bank protection, as is now being done by the Federal Government, there remains only to be added the possible reservoir construction for increasing the low-water flow.

POSSIBILITY OF RESERVOIRS.

Lyman E. Cooley, engineer of the Chicago Canal, writes me that while investigating the possibilities of the Keokuk Dam he estimated that a limited reservoir construction above that point would increase the river flow 60 per cent as far down as Keokuk and that the most of such reservoir work would be up here in Minnesota. This possible reservoir development being mostly in Minnesota, it can only be done by the State of Minnesota, though its benefits to the whole river below and to all those States are clearly seen and desired by the whole Mississippi Valley. I therefore count confidently on the support of them all to the granting to the State of Minnesota of the 1,500,000 acres of Government land still remaining within the borders of the State, which could then be used as the basis for a State bond issue with which to do this comprehensive State reservoir work. These lands are to-day of little value. As drainage progresses and the State fills up they will become more and more valuable and can be sold as seems best until all are disposed of, the proceeds to go into a sinking fund with which to retire the issue of State bonds, say, in 40 or 50 years.

MEANS AN AMENDMENT.

Of course this means an amendment to our State constitution, as was accomplished in Illinois and has been done in other States. In addition, the State should be able to buy from the United States Government, at cost, the high dam between St. Paul and Minneapolis. This is estimated to cost less than $1,500,000. It will produce a minimum revenue which, called 5 per cent interest, would represent an investment of $7,500,000, and really much more, as I am only using minimum figures to make my argument safe. This would permit the State to issue bonds enough to pay for the dam and a large amount more, the latter being used to begin work on other dams, say, in the Minnesota Valley. The lands and the dam should permit a maximum State bond issue of $20,000,000, only to be issued piecemeal and strung along for years. Then, based on new water power created, as in New York State, other State bonds could be issued, so gaining enough funds to do all possible State reservoir building at no cost to anyone, simply using the State credit as a safe asset that will pay the cost of construction and then be left in State ownership forever afterwards to yield a State revenue with which to cut down State taxation.

PROPOSITION IS COMMENDED.

I have studied this project for years. I have put it up to the best men I can find—United States engineers, large capitalists, here and elsewhere, political leaders here, in Washington, and down the whole Mississippi Valley—and I have yet to find a single one who says it is impracticable or unreasonable. On the contrary, I have never failed to receive the indorsement of these men. As a loyal citizen of Minnesota, as a member of the waterways commission appointed by Gov. Eberhart to investigate and recommend measures and ways and means, I now submit the plan for the thoughtful and honest consideration of the Legislature and by the people of Minnesota.

BILLS BEFORE LEGISLATURE.

Two bills introduced by Hon. L. C. Spooner are now before the legislature. One calls for the creation of a State water-supply commission to care for the water interests of the State; and if ever any State needed competent, honest servants, Minnesota needs them now in the promotion of this enterprise.

The second bill calls for funds to take an engineering inventory of the State's assets in water resources. The sum is far too small, but it will make a start.

Canada shames us all in her large intelligence in such matters and in the settlement of her cheap lands. She is getting the settlers who ought to locate in this State, and she has just paid $75,000 for an engineering investigation of the proposed wateway from Lake Superior to the Ottawa River.

When our next legislature meets two years hence we should be prepared to offer that body the facts regarding our State water assets, with recommendation as to the proper action to take, such as a possible constitutional amendment permitting an issue of construction bonds. We ought to have things ready in Congress for turning over to the State the Government lands and the high dam, as already indicated. Meanwhile we should keep every predatory and hostile interest from securing a strangle hold on any stream or dam or reservoir site that the State might possibly want. Any water commission that may be created can not hope to more than make a beginning in the next two years, and I hope this legislature will appoint one of its number as the accredited representative of the State to cooperate with the water commission, if such be created, this representation to treat also with the various States and interests in the Mississippi Valley and with the President of the United States and Congress as shall be necessary.

The man to be selected for this important duty should have a broad, constructive grasp of the whole proposition. He should be a man of recognized integrity and unfaltering purpose, equipped with a personality and power of presentation of the subject that shall carry weight.

A. L. CROCKER.

MINNEAPOLIS.

[From the New Orleans Item.]

THE LEVEES AND THE RIVER.

What has happened at Beulah, what is threatened at Filters Point, what may come at Alsatia or Hymelia or Panther Forest or above Morganza, if the river continues to rise, is irrefutable evidence that the "levees-only" method of handling the problem of the Mississippi Valley is pitifully inadequate and futile.

What certain sage engineers have said about the impossibility of doing anything else to regulate floods save building levees will not be accepted without question by the people endangered. It is of too recent occurrence that learned gentlemen of the engineering profession staked their reputations that the Panama Canal could not be built in the exact way and manner in which it has been built, and that other learned gentlemen said that neither the Chagres in Panama nor the Nile in Africa could ever be "controlled."

What has been proven possible in one watershed would seem to the layman's mind possible in another, when the only fundamental difference is in magnitude, especially in this day when magnitude of any material problem has ceased to awe.

People along the Mississippi flood frontage remember that the record-breaking, levee-smashing water of 1912 came only from some of the lower rivers plus a torrent from the Ohio. They wonder in fear what would happen if, as is entirely possible, the Missouri, the upper Mississippi, and the Ohio should happen to be exceptionally high at the same time that the lower basins were already filled.

What is needed is an impartial survey of the whole great interrelated question of water conservation, irrigation, and reclamation, transportation maintenance, and flood prevention from the headwaters to the jetties; decision upon an inclusive program covering every phase; and the adoption of that program and provision for it as a whole, just as the construction of the Panama Canal was planned, adopted, and provided for in its entirety.

The Federal Government is the only agency capable of doing this.

The people of the valley who fail to see beyond the tops of their levees and who fear "invasion of States' rights" are blindly ignorant of their own interests, forgetful of the interests of millions of others who live elsewhere in the vast watershed of the Mississippi Valley.

The "problem of the valley," extending in its various phases over 28 States and affecting over 50,000,000 people, is one and the greatest of the many problems which transcend in moment and in scope the capacities or the powers of individual States.

[From the National Reclamation Association, New Orleans.]

FLOOD PREVENTION.

In its issue of February 1, 1913, the Los Angeles Tribune prints the following editorial:

"ANOTHER OBJECT LESSON OF FEARFUL COST.

"That the people of the Mississippi Valley should again be suffering personal distress and enormous loss from floods within a year of a former catastrophe is reason for serious reflection on the American way of despoiling the country of natural resources without concern for results, and trusting to luck for absolution from the logical results of such folly.

"One generation is now paying fearfully for the denuding of the watersheds along the Mississippi, Missouri, and Ohio Rivers. Yet so slow is humanity to learn the real lessons of experience that it can not be predicted when the scientific and frugal methods of prevention will take the place of profligacy, with real river protection and improvement.

"Accrding to figures compiled by Hubert Fuller and published in the North American Review, the Government has spent more than $90,000,000 for the 'improvement' of the great stream that is now an annual menace. The result is that 'it costs the United States $20 for every ton of freight carried' on the three great streams of the Middle West, figuring in the expense the interest on the investment.

"We are having a terrible object lesson on the evils of the pork barrel whereby millions are taken out of the National Treasury and spent with the abandon of the drunken sailor on our waterways, big and little, for the political benefit of Members of Congress. After two floods of such stupendous harm in the Mississippi Valley it should not be necessary to argue much for the Newlands bill, which proposes to harness the headwaters of America's great streams."

Mr. Newlands. These editorials, coming from New England, the South, and the Pacific coast, indicate how general the expression is in favor of big and comprehensive National and State action.

Here we find the people upon the tributaries and source streams of the Mississippi moving. At Pittsburgh, where they suffer annually a loss aggregating from three to five million dollars from the floods, they appointed what is called the Pittsburgh Flood Commission, for the purpose of looking into this matter, and appropriated $100,000 for surveys and plans. They appreciate the importance of this question. That commission has passed resolutions commendatory of this bill. The Pittsburgh Chamber of Commerce has passed similar resolutions. Everywhere along the line you will find a demand for the conservation of the waters as the most valuable asset of the Nation; a demand for teamwork upon the part of the Nation and the States, a demand for teamwork upon the part of the scientific services that are now, in a detached and separated way, working upon our rivers; a demand for large appropriations; a demand for continuous work.

Why is it that our southern friends have not come into this movement with the vigor that usually characterizes them? I am at a loss to understand. Our Southern States are either traversed by the greatest of our rivers or are the sources of more rivers than any other portion of our country. There is no part of the United States that would benefit so much from the cooperation of rail and boat as will our Southern States, with their numerous rivers, arms of the sea, and the Gulf; with their splendid harbors, with their magnificent climate, with their extraordinary capacity for production; and yet there is more inertia upon this subject displayed by the Representatives of the South than by the Representatives of any other part of the country.

I have been unable to understand it, unless it is that so large a portion of the existing expenditures upon our rivers is made in the Southern States that they are unwilling to disturb that system, and that they are fearful of contemplating a great and efficient system that, in the end, will do much more effective work, lest their pending operations be temporarily disturbed. They must be pleased with the individual-project system, which makes each individual Congressman the arbiter of his own district, the controlling power as to whether or not appropriations shall come to that district. Such a condition as that has a subtle influence upon judgment and upon action. It is a part of the old spoils system that prevailed for so long to the injury of the country and the injury of the administration of its offices, which was continued as regards projects in waterways and public buillings, and which is only gradually yielding to better methods as the result of scientific legislation.

But I think if our Southern Representatives will go and test the sources of political power, the people themselves, they will find among them a general demand for a revolution of the existing system. The Senator from Georgia [Mr. Smith] will recall that some three or four years ago it was my privilege to address the combined boards of trade of Georgia at an immense banquet given in Atlanta, at which the Senator, then the governor of the State, was present. I think the Senator will bear witness with me to the fact that not only was extraordinary interest manifested in the scheme of National development and National and State cooperation that was then discussed, but that there was an enthusiastic expression of favor regarding it. Wherever in the South nonpolitical gatherings are held—the meetings of the Southern Commercial Congress, the meetings of the Southern Reclamation Association of Louisiana, waterway conventions at Memphis, and elsewhere—you find the most enthusiastic expressions in favor of this policy. You will find to-day the two leading newspapers of New Orleans, the Item and the Picayune, advocating it. You will find the Progressive Union of New Orleans, a great commercial organization established for the advancement of the interests of the South, in favor of it. You will find the Reclamation Association of that State in favor of it, and you will find them all condemnatory of the narrow spirit of some southern statesman that insists simply upon a vision confined to the lower Mississippi and disregards the national aspirations upon this subject.

This movement is now being, I may say, in a measure directed and led by Mr. George M. Maxwell, formerly an able and distinguished lawyer of California, who became so interested in the question of irrigation that he abandoned his practice and devoted entirely seven or eight years of his life to the active propaganda for its advancement. He was the head of the executive committee of the Irrigation Association, and for years, both in the public press and upon the platform, was the strong advocate of western sentiment upon this subject. Led by his study of that subject to the conviction that irrigation was only a part of the water question, and a small part, and that the proper development of our water resources involved teamwork between the Nation and the States and the development of all related uses of water in the advancement of wealth and prosperity, he has taken up this propaganda. He was chosen as chief of the executive committee of the Pittsburgh Flood Commission; he has been chosen as the chief of the executive committee of the Louisiana Reclamation Service or Union; he has been chosen as a representative of the leading waterway association on the Pacific coast, where his influence has always been potent for wise measures. He is to-day conducting a propaganda at New Orleans, supplying all the various communities with literature upon this subject, almost suffering at times from pecuniary distress as the result of his disinterested labors.

I have received a telegram from Mr. Maxwell expressing his inability to be here at this important time, and expressing the hope that in my eagerness to secure action now I will not accept partial results by way of amendment; that the thing to do is to fight for the river-regulation bill as drawn; and that if that fight is conducted earnestly and consistently victory will soon be our reward. Animated by the suggestion, I have not viewed with hospitality the various suggestions that have been made by my colleagues upon this floor that I should narrow the operation of this measure by resorting to some temporary expedient.

We have been for 100 years pursuing this question; we have the accumulated experience of engineers, constructors, and publicists upon it; we have a universal public sentiment. It is true that the Committee on Commerce accepted a part of an amendment which I offered, which you will find in the bill, and with which they propose to satisfy me, but I am not satisfied. It is true that appeals have been made to me not to imperil the passage of the pending bill by long discussion in the closing hours. I am not insensible to that appeal, but the time will come, unless some action is taken, when upon the river and harbor bill the representatives of regions other than the lower Mississippi Valley will see to it that this is planned and conducted as a great national and interstate enterprise, and they will, at the risk of imperiling and destroying this insufficient legislation, which parties interested have been building up, insist upon large national and interstate plans and works under the cooperative methods for which my river-regulation bill calls.

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Mr. Newlands. Mr. President, I offer an amendment regarding the river-regulation board. I ask that it be read and that the question of its order be submitted to the Senate.

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Mr. Newlands. Mr. President, instead of offering the amendment which I before offered and requested that the question be submitted to the Senate as to its being in order, I offer a condensed statement, which at present proposes to make no appropriation beyond the expenses of investigation and plans, providing $500,000 for such investigation and plans, but providing that the plans shall be made in such a way as to involve an expenditure of $50,000,000 annually, commencing on the completion of the Panama Canal and extending over a period of 10 years.

I will ask the Secretary to read the amendment which I send to the desk. I will state that the amendment is on the desks of Senators, having recently been printed.

The President pro tempore. The amendment proposed by the Senator from Nevada will be stated.

The Secretary. It is proposed to insert the following:

A commission, to be known as the river regulation commission, consisting of the Secretary of War, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce and Labor, two Members of the Senate, to be selected by the President of the Senate, and two Members of the House of Representatives, to be selected by the Speaker, is hereby created and authorized

to bring into coordination and cooperation with the Corps of Engineers of the Army the other scientific or constructive services of the United States that relate to the study, development, and control of waterways and water resources and subjects related thereto, and to the development and regulation of interstate and foreign commerce, with a view to uniting such services through a board or boards in investigating questions relating to the development, improvement, regulation, and control of navigation as a part of interstate and foreign commerce, including therein the related questions of irrigation, forestry swamp-land reclamation, clarification of streams, regulation of flow, control of floods, utilization of water power, prevention of soil waste, cooperation of railways and waterways, and promotion of transfer facilities and sites, and in forming comprehensive plans for the development of the waterways and water resources of the country for every useful purpose by cooperation between the United States and the several States, municipalities, communities, corporations, and individuals within the jurisdiction, powers, and rights of each, respectively, and with a view to assigning to the United States such portion of such development, promotion, regulation, and control as can be properly undertaken by the United States by virtue of its power to regulate interstate and foreign commerce and by reason of its proprietary interest in the public domain, and to the States, municipalities, communities, corporations, and individuals such portion as properly belongs to their jurisdiction, rights, and interests, and with a view to properly apportioning costs and benefits, and with a view to so uniting the plans and works of the United States within its jurisdiction, and of the States and municipalities, respectively, within their jurisdictions, and of corporations, communities, and individuals within their respective powers and rights, as to secure the highest development and utilization of the waterways and water resources of the United States; and such river regulation commission is authorized to appoint as members of such board or boards such engineers, transportation experts, experts in water development, and constructors of eminence as it may deem advisable to employ in connection with such plans. Such plans shall involve the expenditure by the United States of $50,000,000 annually, commencing on the completion of the Panama Canal and extending over a period of 10 years. And for the expenses of such organization, investigation, and plans the sum of $500,000 is hereby appropriated.

Mr. NEWLANDS. Mr. President, individually I believe that the work of construction should commence immediately.

Mr. LIPPITT. Mr. President——

The PRESIDENT pro tempore. Does the Senator from Nevada yield to the Senator from Rhode Island?

Mr. LIPPITT. I raise the point of order——

Mr. NEWLANDS. Mr. President, I did not yield to the point of order, though I will yield for a question.

The PRESIDENT pro tempore. The Senator from Nevada is entitled to the floor.

Mr. NEWLANDS. Mr. President, I believe the time has come for work. I believe that it has been absolutely developed to the satisfaction of the entire American people that the methods that have been employed for a hundred years in the regulation and control of our rivers are absolutely deficient. I believe that the public mind is made up that this work should proceed immediately, involving cooperation between the scientific services, cooperation between the Nation and the States, and involving an ample fund, amounting to at least $50,000,000 annually for a period of 10 years, this work to follow and supplement the great work upon the Panama Canal; but I find such opposition—not on the outside, but on the inside, of Congress—to entering immediately upon such constructive work that I yield to the demand for further information upon the subject. So I have condensed the legislation which I have sought upon this subject in a simple amendment, which provides for the organization of a river regulation commission, composed of four Secretaries in the

President's Cabinet—the Secretary of War, the Secretary of the Interior, the Secretary of Agriculture, and the Secretary of Commerce and Labor—who have jurisdiction of the various services that relate in any way with water, and also two Members of the Senate and two Members of the other House, with a view to utilizing the services of distinguished engineers and constructors, and also with a view of coordinating these services in such a way as to secure comprehensive plans involving this large expenditure of money within 10 years after the completion of the Panama Canal.

This amendment merely provides for the expenditure of only the moderate sum of $500,000 in the making of the plans and investigations in order to convince Congress upon a subject concerning which the country is already convinced.

Now, Mr. President, I ask a vote upon this amendment. which is simply a continuance of the present work of investigation going on under the river and harbor act, and it seems to me it is entirely germane.

Mr. Townsend. Mr. President, may I ask the Senator why he terms it a "river regulation commission"? Is it not intended to cover the investigation of all waterways?

Mr. Newlands. Of all waterways.

Mr. Townsend. Then why use that term?

Mr. Newlands. Of all the rivers in the country. I want to distinguish it from harbor improvements.

Mr. Lippitt. I make the point of order that the amendment is general legislation and not pertinent to the pending bill.

Mr. Newlands. Well, Mr. President, if the Chair has any doubt upon that question, I should like to have it submitted to the Senate.

The President pro tempore. The Senator from Rhode Island makes the point of order on what ground?

Mr. Lippitt. That the propose damendment is general legislation and can not be attached to an appropriation bill.

The President pro tempore. The Chair is constrained to sustain the point of order.

Mr. Newlands. I ask that the question be submitted to the Senate, Mr. President, and I do so at the request of numerous Senators.

The President pro tempore. The Chair is in no doubt on the point at all, and hence feels constrained to decide it.

Mr. Newlands. Then I appeal from that decision, Mr. President.

The President pro tempore. The Senator from Nevada appeals from the decision of the Chair. The question is, Shall the decision of the Chair stand as the judgment of the Senate? [Putting the question.] By the sound the "ayes" appear to have it.

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Mr. Clapp. Mr. President, I trust the Senator will withdraw his appeal. It is placing Senators in a position that is not at all pleasant. For one, I am heartily in favor of his proposition. The ruling of the Chair, however, is so manifestly just that I should have to vote to sustain the ruling, and consequently apparently vote against the amendment. It is not a test of the strength of it, and I trust the Senator will withdraw his appeal.

Mr. Bristow. Mr. President, I trust the Senator from Rhode Island (Mr. Lippitt) will withdraw the point of order. It seems to me that this amendment is as germane as many others that have been adopted, and certainly it is as much in order as many other amendments which have been passed upon. It seems to me, under the circumstances, that the Senator from Nevada (Mr. Newlands) has a right to an expression of the Senate on the merits of his amendment. I dislike to vote to overrule the Chair, but, under the circumstances in which this comes before the Senate, it seems to me that, having let in these other amendments, it would be certainly unjust not to let this one in, or at least to have a vote upon it.

Mr. ROOT. If he is at liberty to do so, I hope the Senator from Rhode Island (Mr. Lippitt) will withdraw his point of order and let us have a vote. The fact is that it is apparent that the Senate is becoming very restive over the undue proportion of the time remaining that this river and harbor bill is taking. The various discussions upon it are extending so that it is going to crowd out a lot of other appropriation bills, and that is the real trouble. I think the Senate will be ready to vote on this amendment promptly; and I hope the Senator from Rhode Island will withdraw his point of order, with the understanding, which I think everybody will agree to, that we shall vote.

Mr. NEWLANDS. I should be very glad to stop further discussion if we could have a vote on this amendment.

Mr. BRANDEGEE. Mr. President, a parliamentary inquiry. Were the yeas and nays ordered on the appeal from the ruling of the Chair?

The PRESIDENT pro tempore. They were not.

Mr. LIPPITT. Mr. President, referring to what the Senator from New York has said, that the Senate is becoming restless over the time that is being consumed on this bill, I recognize that situation. His proposal is that I shall withdraw this point of order, so that a vote may be taken upon the proposition itself for the purpose of saving time. I can see no better way of saving time than to have the appeal on the point of order voted upon by the Senate. I think the point is order is manifestly well taken. The Chair has ruled that, in his opinion, it is well taken; and if it is simply a question of saving time I know of no better way to do it than to take a vote.

Mr. NEWLANDS. Mr. President, I will state that I believe the majority of this body favor this amendment. I do not wish to waste the time of the body in discussion. I shall be glad to vote, and vote immediately, upon it. I appeal to the Senator from Rhode Island to withdraw his point of order. I do not wish to urge this appeal, because many Senators have approached me and told me that while they were for this measure they did not feel that they could vote to overrule the decision of the Chair. Now, the question is, What was the decision of the Chair? Am I appealing from a decision not to submit this question to the Senate, or am I appealing from the decision of the Chair as to whether this is in order? I would gladly appeal from the decision of the Chair as to the former, but I would not like to press the appeal from the latter, because I know there are many Senators who favor this measure and who would vote for it, and yet who would be disposed to sustain the Chair upon the point of order. I would not wish, therefore, to appear to have an adverse vote that was not deserved.

I appeal to the Senator from Rhode Island to let us have a vote on this question, and let us put the bill through and let it go to the House, and let them consider the matter in conference.

Mr. Myers. Mr. President, will the Senator from Nevada yield to me for a moment?

Mr. Newlands. Yes.

Mr. Myers. A few minutes ago the Senate, by a vote of the Senate, declared that the Connecticut River Dam bill was a proper amendment to offer here. I have great respect for the Chair and the rulings of the Chair, and seldom if ever question them. According to my recollection, however, the Senate voted that the Connecticut River Dam bill was a proper amendment, that it was not out of order; and it seems to me a precedent of that kind set by the Senate ought to be good for one day.

Mr. Lippitt. Mr. President——

Mr. Brandegee. Mr. President——

The President pro tempore. The Senator from Rhode Island first addressed the Chair.

Mr. Lippitt. At the request of several Senators and with the understanding that the vote on this measure is to be taken without further debate I will withdraw the point of order.

The President pro tempore. The point of order is withdrawn.

Mr. McCumber. I rise to a point of order.

The President pro tempore. The Senator will state it.

Mr. McCumber. It is that the Chair having once ruled that the point or order made was correctly made, and a vote being called for again upon that question, the Senator can not withdraw his point of order. It has already been decided.

The President pro tempore. The Chair is of opinion that the Senator can withdraw it by unanimous consent. Is there objection?

Mr. McCumber. I object.

Mr. Poindexter. Mr. President, a parliamentary inquiry.

The President pro tempore. The Senator will state it.

Mr. Poindexter. As long as the question is pending upon an appeal from the decision of the Chair, the matter not having been finally determined, can not the Senator who made the point withdraw it? I should think he would have the privilege of withdrawing it so long as it is pending and undecided upon the appeal which has been taken.

Mr. Brandegee. I make the point of order that an appeal from the decision of the Chair must be decided without debate.

The President pro tempore. The Senator is correct in that.

Mr. Newlands. Mr. President. I rise to a parliamentary inquiry.

The President pro tempore. The Senator will state it.

Mr. Newlands. Is the appeal from the decision of the Chair sustaining the point of order, or is it from the decision of the Chair refusing to submit the question to the Senate?

The President pro tempore. The Senator from Nevada [Mr. Newlands] offered an amendment. The Senator from Rhode Island [Mr. Lippitt] made the point of order that it was obnoxious to Rule XVI, being general legislation. The Chair sustained the point of order, and the Senator from Nevada took an appeal from the decision of the Chair.

Mr. Newlands. Then I made a motion to submit that question of order to the Senate.

The President pro tempore. The Senator could not make that motion under the rule. It could not be entertained.

Mr. Newlands. Very well, Mr. President. Then I withdraw my appeal.

The President pro tempore. The appeal is withdrawn.

Mr. Poindexter. A further parliamentary inquiry, Mr. President.

The President pro tempore. The Senator will state it.

Mr. Poindexter. Is not the question now before the Senate the point of order insisted upon by the Senator from North Dakota [Mr. McCumber]?

The President pro tempore. That has been settled.

Mr. Newlands. In view of the fact that a number of Senators have indicated to me that they wished to support this amendment and to support the bill of which this amendment is a condensation, and yet that they would feel constrained to vote to sustain the decision of the Chair upon the appeal, I withdraw my appeal.

The President pro tempore. Is there objection to the Senator withdrawing his appeal? The Chair hears none, and the appeal is withdrawn.

Mr. Cummins. I desire to say just one word. I am very sorry the Senator from Nevada has withdrawn his appeal, because I think the point of order was not well taken, and I was prepared to vote with the Senator on that proposition. But as he has withdrawn it, I have nothing more to say.

The President pro tempore. The bill is still in the Committee of the Whole and open to amendment.

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The President pro tempore. The bill is in the Senate, open to amendment. If no amendment be proposed, the question will be, Shall the amendments be engrossed and the bill read a third time?

Mr. Newlands. Mr. President, I now renew the amendment that I offered a short time ago, providing simply for an investigation, organization, and plans, constituting a river-regulation commission, consisting of the Secretary of War, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce and Labor, two Members of the Senate, and two Members of the House, leaving out the last sentence but one—the sentence which provides that the plans shall involve the expenditure of $50,000,000 annually. A point of order was made against that amendment by the Senator from North Dakota [Mr. McCumber], and he has indicated his willingness to withdraw his objection if the sentence to which I have referred is left out. I therefore move the adoption of this amendment.

The President pro tempore. The Senator from Nevada offers an amendment, which will be stated.

Mr. Nelson. The amendment has been already read. I do not think it is necessary to read it again.

The President pro tempore. Without objection, the reading of the amendment will be dispensed with.

Mr. Gronna. I should like to have read the portion which was stricken out.

The **President** pro tempore. The part stricken out will be stated.

The **Secretary**. The part stricken out is on page 3 of the printed amendment, line 12, and is as follows:

"Such plans shall involve the expenditure by the United States of $50,000,000 annually, commencing on the completion of the Panama Canal and extending over a period of 10 years."

Mr. **Newlands**. That portion, I will say, is stricken out of the amendment. I now offer it as amended in that way.

Mr. **Brandegee**. Mr. President, before voting upon the amendment I desire to say that with that part stricken out I shall be glad to support it, and if the system proves a success after its organization I shall be glad to vote for appropriations for it.

The amendment was agreed to, as follows:

Sec. 3. A commission, to be known as the river-regulation commission, consisting of the Secretary of War, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce and Labor, two Members of the Senate, to be selected by the President of the Senate, and two Members of the House of Representatives, to be selected by the Speaker, is hereby created and authorized to bring into coordination and cooperation with the Corps of Engineers of the Army the other scientific or constructive services of the United States that relate to the study, development, and control of waterways and water resources and subjects related thereto, and to the development and regulation of interstate and foreign commerce, with a view to uniting such services through a board or boards in investigating questions relating to the development, improvement, regulation, and control of navigation as a part of interstate and foreign commerce, including therein the related questions of irrigation, forestry, swamp-land reclamation, clarification of streams, regulation of flow, control of floods, utilization of water power, prevention of soil waste, cooperation of railways and waterways, and promotion of transfer facilities and sites, and in forming comprehensive plans for the development of the waterways and water resources of the country for every useful purpose by cooperation between the United States and the several States, municipalities, communities, corporations, and individuals within the jurisdiction, powers, and rights of each, respectively, and with a view to assigning to the United States such portion of such development, promotion, regulation, and control as can be properly undertaken by the United States by virtue of its power to regulate interstate and foreign commerce and by reason of its proprietary interest in the public domain, and to the States, municipalities, communities, corporations, and individuals such portion as properly belongs to their jurisdiction, rights, and interests, and with a view to properly apportioning costs and benefits, and with a view to so uniting the plans and works of the United States within its jurisdiction, and of the States and municipalities, respectively, within their jurisdictions, and of corporations, communities, and individuals within their respective powers and rights, as to secure the highest development and utilization of the waterways and water resources of the United States; and such river-regulation commission is authorized to appoint as members of such board or boards such engineers, transportation experts, experts in water development, and constructors of eminence as it may deem advisable to employ in connection with such plans. And for the expenses of such organization, investigation, and plans the sum of $500,000 is hereby appropriated.

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Mr. **Newlands**. Mr. President, the reading of these amendments to the river and harbor bill must convince every listener of their national and beneficial character. Amendment 77 simply calls for a report from the Secretary of War regarding the saving and other advantages of the continuing contract system, regarding the rapidity with which projects can be completed, regarding methods of standardization by which the waterways of the country may be improved uniformly in proportion to their capacities to the existing or probable demand of general commerce. It also calls for a report as to one or more systematized schemes of improvement, and also for other matters of related information pertaining to the uses or control of the waters of the country, and makes an appropriation of $100,000.

Now, can the Senator from Minnesota give me any reason why such an amendment should be quarantined? Does that amendment contain the germs of a loathsome disease prejudicial to the interests of the country? I would ask a reply from the Senator from Minnesota. The Senator does not answer, and I assume, therefore, that he has nothing to sav against the amendment. On the contrary, he believes in the amendment.

Mr. NELSON. Mr. President——

Mr. NEWLANDS. The Senator supported the amendment in the committee and on the floor.

The PRESIDENT pro tempore. Does the Senator from Nevada yield to the Senator from Minnesota?

Mr. NEWLANDS. Certainly.

Mr. NELSON. I do not care about answering the Senator more than to say that he is mistaken about my views. I never believed in the amendment that he introduced. It was subject to a point of order when it was before the Senate, but I felt like a good many other Senators, that having had six hours' debate in favor of the amendment probably the easiest way was to let it go on the bill. But I never believed in it.

Mr. NEWLANDS. Does the Senator mean to say that he is opposed to the principle of the amendment or opposed to it simply on the ground that it is not in order? I ask the Senator whether he means that he is opposed to the principle of the amendment or if he is simply opposed to it on the ground that it is not in order?

Mr. NELSON. I have been unable to discover the real principle of that amendment as yet, and therefore I am not prepared to answer.

Mr. NEWLANDS. I regard that as the misfortune of the Senator. I trust that he will soon be able to come to a favorable conclusion regarding it.

But, Mr. President, this section simply calls for information regarding a matter that has been under discussion for many years, regarding a matter concerning which the parties have been declaring themselves for the last eight years, as to a system of developing our rivers by cooperation with the States and other interested parties in such a way as to develop every use of our rivers in addition to navigation, and in such a way as to vastly advance the prosperity and the wealth of the country.

Yet this amendment, which simply calls for information, is quarantined, according to the statement of the Senator from Minnesota, by the conferees of the House. That action is in line with the action of the Rivers and Harbors Committee of the House for over 20 years. They have sought to hamstring the Corps of Engineers of the Army in their endeavor to perfect plans for a related system of waterways. apparently content that large sums of public moneys should be spent upon the waterways, provided naviation, which constitutes the only constitutional basis of our action, is not promoted thereby.

I have alluded heretofore to the sinister influences, of which Congress itself may be unconscious, tending to a control of the action of the country with reference to waterways in such a way as to bring about large expenditures in different localities to the interests of those localities without endangering in any way the monopoly now enjoyed by the railway systems of the country. The railways have been content that we should be liberal in our appropriations and even wasteful in our appropriations. They have not stood on guard in the interests of economy. Every expenditure made, provided it did not promote navigation, furnished them custom in the way of passengers and freight. They were only solicitous that we should not have a continuous and related system of waterways, perfect in all their equipments, just as railways are, with transfer facilities, terminal facilities, freight houses, warehouses, and all the paraphernalia that belong to transportation, including such conveniences as would bring ship and car, and boat and car, into absolute cooperation in the people's service.

True to the traditions of the Rivers and Harbors Committee of the House, we have the conferees of the House even refusing to permit a section in the bill which simply calls for information from the experts in the employ of the Government to be voted upon by the Members of the House itself. The plea may be made that we are in the closing hours of legislation, but we all know that the House has an expeditous way of bringing a debate to a conclusion. There will be no difficulty there, if a conference report is made submitting these two amendments to the Members of the House, in fixing a rule limiting the debate to two or three hours, and limiting the time of the speakers in such a way as that no delay will be accomplished, and yet free opportunity for discussion be given.

My purpose is not to defeat this bill. My purpose is to perfect this bill and to perfect it by consulting the House itself, to whom participation in debate upon this subject has thus far been denied by the quarantine which has been accomplished through the action of the House conferees.

Mr. BRANDEGEE. Mr. President——

The PRESIDENT pro tempore. Does the Senator from Nevada yield to the Senator from Connecticut?

Mr. NEWLANDS. Certainly.

Mr. BRANDEGEE. I wanted to ask the Senator if he had ever introduced this amendment in the form of a bill and had it presented to the committees of each House.

Mr. NEWLANDS. This particular amendment, may I say, was offered to the rivers and harbors bill last year in the Senate, and was passed by the Senate and stricken out in conference. It has never been, according to my recollection, the subject of a separate bill, but its substance was included in the general bill which I have been offering now for the last six or seven years, entitled "A bill for river regualtion." That bill has been before the Commerce Committee of the Senate for six or seven years in varying forms, and was offered in the House by Mr. Bartholdt, a Representative from Missouri, some years ago. There has been opportunity for consideration of these bills in both Houses.

Now, as to the Senate, let me say that in the Senate committee the bill has been considered at various times, but I have never been able to get it out of the committee in a satisfactory form. For some time it has been referred to a subcommittee of the Committee on Commerce, and recently while we were considering the rivers and harbors bill the committee took that bill out of the hands of the subcommittee and ordered a report of it to the Senate without recommendation. So that bill is on the calendar, but without recommendation. Then, later on, its substance was put upon this bill by the Senate in these amendments.

Mr. BRANDEGEE. Inasmuch as the Senate has already passed the proposition in the form of an amendment, I wished to find out whether the Committee on Rivers and Harbors of the House, where the present impasse seems to exist, had ever considered the question, or whether the Senator had ever been before the committee and tried to get the Rivers and Harbors Committee of the House to adopt his proposition.

Mr. NEWLANDS. I do not know what progress has been made regarding my bill as introduced by Mr. Bartholdt in the House, and I am not familiar with it, but what I claim is that this is a legitimate part of a river and harbor bill. I think the Senator from Ohio [Mr. Burton] will bear me out in that assertion. The river and harbor bill, and I ask the attention of the Senator from Ohio, has been the vehicle of just such legislation as this for years. The river and harbor bill has been regarded as a bill of general legislation relating to rivers and harbors. I appeal to the Senator from Ohio, whose long experience upon these matters we all recognize, whether that is not so.

Mr. BURTON. Mr. President——

The PRESIDENT pro tempore. Does the Senator from Nevada yield to the Senator from Ohio?

Mr. NEWLANDS. Certainly.

Mr. BURTON. It is impossible to frame a river and harbor bill without certain administrative features. Otherwise the public works could not be properly managed; new projects would not be undertaken and finished in proper form. It is not merely an appropriation bill; it is a bill providing for the cost and management of improvements in rivers and harbors.

I wish to say further, Mr. President, that I very strongly approve these two amendments of the Senator from Nevada. The great difficulty in past years has been that in a measure the ostensible object of which is to improve rivers and harbors numerous projects relating to bank protection and prevention of floods have been brought forward under the guise of river and harbor improvement. I do not believe there is any solution of this great question of the control of waters except by a commission taking up all the related uses of water.

I have strongly opposed the bill of the Senator from Nevada, which would place this whole subject under the control of a commission and give them a certain amount of money to expend, authorizing them to select projects for improvement, but this provides for investigation only, with a view to bringing under the control of the different bureaus or departments of the Government the whole subject of the use of waters, including navigation, water-power regulation, the prevention of soil erosion, and other related subjects. We can not much longer bring in river and harbor bills without the information obtained by such an investigation as is provided in this measure. Otherwise, if we take them up and consider them superficially and ingraft various propositions relating to waters on a river and harbor bill we in that way make appropriations on subjects with which we are not in a position to deal.

Mr. NEWLANDS. I felt sure that the Senator, with his familiarity with the subject and with his long-held views, would indicate his indorsement of these two amendments. There has been a difference between the Senator and myself regarding another matter.

Mr. PERCY. As I understood the statement of the Senator from Ohio, it was that he indorses the first amendment, but strongly dissented from the second.

Mr. BURTON. No; Mr. President, I indorse both the first and second. The second amendment is a modified form of a bill which has been pending for a long while. That bill as originally framed provided that this commission should have a certain amount of money, $50,000,000 is proposed, and should expend it as they pleased. I am not ready to approve such a proposition. But amendment No. 78 does not go that far; it provides only for investigation, and investigation by the different departments and bureaus of the Government.

Mr. PERCY. The amendment No. 78 has never, so far as the personnel of the commission is concerned, been embodied in any bill on any amendment, I think, heretofore offered by the Senator from Nevada. As the Senator from Ohio has studied the personnel of the commission, does he prefer the personnel of the commission contained in the amendment as offered in this bill to that heretofore contained in the amendment offered by the Senator from Nevada? One provides for a commission of 8; the other, which is one that has been heretofore designated by the Senator from Nevada, provides for a commission of 12. No one of the commission of 8 is embraced in the commission of 12. In other words, the commission as contained in this amendment is one never heretofore offered nor heretofore discussed by the Senator from Nevada.

Mr. BURTON. I regard the question of the personnel of the commission as largely one of detail. I am inclined to think, however, the designation of the different Cabinet officers—the Secretaries of War, Interior, Agriculture, and Commerce and Labor—with two Members of the Senate and two Members of the House as an effective method, as good a selection as can be made. The fact that these Cabinet officers are named is significant. It means that we wish to have this work undertaken by those of very high authority.

Mr. NEWLANDS. Mr. President, there have been no differences between the Senator from Ohio and myself regarding the general policy which should be pursued with reference to these rivers. We were together on the Inland Waterways Commission, which made its report about six years ago, and we agreed in our views that there should be cooperation of the scientific services that relate to water; that there should be cooperation of the Nation with the States. We agreed regarding that report, and agreed that this work should be conducted in cooperation with the various scientific services, including the Engineer Corps of the Army, and in cooperation with the Nation and the States under a system involving a large fund and continuous work.

I differed with the Senator only in a supplemental statement which I made in the report of the Inland Waterways Commission, in which

I insisted that we should provide specifically a large fund of at least $50,000,000 annually for 10 years, so that our engineers and constructors could plan their works with reference to a definite appropriation lasting over a long period of time and that they should be given a comparatively free hand, both in plans and works.

In shaping the pending amendment I have adapted myself to the limitations imposed by the judgment of the Senator from Ohio, as expressed in that report, and I expected nothing but his cordial indorsement of this amendment.

It is true that some of the bills which I have offered have proposed to create a commission out of the various chiefs of the services that relate to the use of water, with the Corps of Engineers at the head; but in this amendment I have sought to substitute for that commission of service chiefs a commission of department chiefs, including also two Senators and two Representatives. But, Mr. President, it will be perceived that the heads of departments whom I have enumerated are the superiors of the various service chiefs who were designated to serve in the former commission provided for in my bill. I thought it better that we should put the department chiefs in as the commission rather than these service chiefs, thus permitting the department chiefs to bring their service chiefs into coordination and cooperation.

I thought also that it was advisable to bring into active cooperation with these plans and investigations Members of the Senate and of the other House, who by their familarity with all the proceedings would keep both the Senate and the House well informed regarding the progress of the work of the commission.

It will be observed that the amendment does something more than simply prepare for an investigation and plans. It actually accomplishes the coordination and cooperation of the services that relate to water, and thus takes an important step forward in the great policy of teamwork upon the part of the governmental agencies in this important constructive policy.

Mr. President, I have briefly outlined the first amendment; but we have drifted into a discussion of the second one, contained in amendment No. 78. What does that provide? A commission consisting of four department chiefs, in whose departments exist all of the various services that relate in any way to the use of water or the development of water or the study of water—the Secretary of War, the Secretary of the Interior, the Secretary of Agriculture, and the Secretary of Commerce and Labor. Then there are added to the commission two Members of the Senate and two Members of the House of Representatives, to be selected by the President of the Senate and the Speaker of the House of Representatives, respectively.

The commission is authorized to bring into coordination and cooperation with the Engineer Corps of the Army the other scientific constructive services of the United States that relate to the study, conrol, and development of waterways, water resources, and subjects related thereto, and to the development and regulation of interstate and foreign commerce with a view to uniting such services through a board or boards in investigating the questions relating to the improvement, development, regulation, and control of navigation as a part of interstate and foreign commerce, including therein all the related questions referred to in this amendment, and providing for plans that will involve the cooperation of the States, municipalities, and corporations, with a proper adjustment of cost and benefit.

There is also a provision authorizing the commission to appoint and secure the assistance of engineers, transportation experts, experts in water development, and constructors of eminence in connection with such plans.

I ask what is there prejudicial to the interests of the United States in that amendment? Why should that amendment be quarantined as if it contained the germs of disease? Why should not that amendment go to the House for consideration in an orderly way as indicated in the action of the House itself? Why should it be quarantined by the servants of the House—the House conferees—as if they were fearful to trust the wisdom and judgment of the House itself?

I repeat, Mr. President, that I do not desire the defeat of this bill, although I regard the system under which this bill and other similar bills have been framed as an unwise and injudicious and unscientific system. All that I ask is that in this very bill we should consult the Engineer Corps of the Army and the scientific services of the Government through their consolidation and teamwork with reference to the development of waterways in the future with a view to making these unrelated projects not simply useful to existing communities, either in the way of the expenditure of money or in the way of benefiting private property, but for the purpose of making this great work useful to the Nation itself under the constitutional power granted to it by the States regarding the regulation of interstate commerce and navigation as a part of that interstate commerce. I wish to see this whole work founded impregnably upon the only basis upon which it can constitutionally stand, so that hereafter there can be no question concerning the legitimate exercise of our powers. I wish to see that work accomplished so liberally that every section of the country will derive benefit from it and so liberally that under the inspiration of the national policy all the related uses of water under the jurisdiction of the various States will be developed in their highest degree.

This amendment presents nothing prejudicial to the interests of any section, though our friends who represent the lower Mississippi seem to think that it has in it the germ of evil to them. On the contrary, this policy will prove the salvation of the entire Delta of the Mississippi, with its 25,000,000 acres, and it will found the vast works of the future upon such a constitutional basis that no one can object.

As it is, Mr. President, the States materially affected have entirely lost sight of that constitutional power under which alone the Nation can act, and the works in the lower Mississippi, commenced as a legitimate exercise of the interstate-commerce power, are now prosecuted without any regard to the exercise of that power and mainly for the protection and development of private property. I want to see that private property protected and developed; I want to see that vast domain reclaimed. I regret that it ever drifted out of the hands of the Nation, which, as the original proprietor, could have reclaimed it all, prepared it for settlement, and then turned it over under a gradual process of settlement to home seekers, and I will be glad to see the original error remedied, so far as the Nation can constitutionally remedy it; but it must be remembered that the Nation has now lost the power to reclaim that land as proprietor, and that it has no power to reclaim it as sovereign, unless the work which it prosecutes is done under the interstate-commerce power of the Constitution and presents a legitimate instance of the development of the Mississippi River for purposes of navigation. We can not pursue the sham system which we have hitherto pursued, looking out, by cooperation with the levee organizations of the South, for the protection of the lands without in any way developing navigation, facing all the time a diminishing navigation and permitting the one public servant, the railway carrier, to drive out of existence the water carrier, the other public servant. We must bring about, by a system of law and operations, not only the perfection of the waterways with all their incidents—wharves and terminals, stations, and transfer facilities for the conduct of transportation—just as a perfected railway is, but we must also bring one public servant, the water carrier, into cooperation with the other public servant, the rail carrier, through laws that will prevent the rail carrier from driving the waterway carrier, by disastrous competition, out of existence.

Unless we can promote navigation and transportation we have no constitutional basis for national action at all, and the purpose of my amendments and of my bills is to exercise to the full the national power of the development of transportation between the States.

Mr. President, I wish to say that these two amendments, covering simply an organization for effective work, covering simply investigation and plans, and not finally committing the National Government to any particular scheme of work, have their place, according to tradition, in a river and harbor bill as a legitimate part of it. As the Senator from Ohio [Mr. Burton] says, it is utterly impossible to frame a river and harbor bill without providing for the administrative machinery. That is all these amendments do; and all that I ask regarding this measure is, not its defeat, but that the Senate insist on its going back to conference, so that the House conferees can consult the House itself, the source of their power, as to these amendments, and not hang up these amendments in quarantine, as the Senator from Minnesota suggests they have done.

Mr. President, we have had of late many disastrous floods in the South; we had one last year; and so, under the sad lesson of that flood, we increased our appropriation for the lower Mississippi for bank protection and levee building from $3,000,000 to $6,000,000. I proposed, if my recollection is right, an amendment increasing that amount to $10,000,000. No representative of the lower Mississippi can contend that I have ever been unfriendly to the development of that river. On the contrary, in the face of that great disaster I insisted that the Nation should take more liberal action and should practically by a large expenditure now prevent or mitigate these annual losses. I proposed that without making any condition as to the adoption of the policy which I have been so long urging—for I felt the exigency of the moment, and I did not wish to make the exigency of the South the basis of a propaganda which might result in the loss of time in so important a work.

No Senator from that region can claim that for one moment my action has been prejudicial to its interests. On the contrary, I have always proclaimed that the very purpose of the national action which I sought was to enlist to the fullest extent the national powers in cooperation with the States affected, with a view to perfecting the economic system of that area of extraordinary richness and fertility, divided up by an imaginary line between the different States, existing at the same time under the several sovereignties of the States and under the sovereignty of the Nation, and my idea was to combine the powers and the functions of all these sovereigns in such a way as to reach every economic want of that region, not only in navigation and transportation, but in the development of water power, in the reclamation of swamp lands, and in the perfection of a canal system that would in time make it as perfect as Holland is in its distribution of the railway and waterway services.

I am glad to know, while on the one hand the levee commissioners and others organized under the laws of the States have developed into political organizations the perfection of whose administration is somewhat affected by politics, that the sentiment of the South itself, outside of the sentiment controlled by the levee commissioners, has been gradually drifting into the support of this great policy.

The New Orleans Item, a prominent paper of that city, is conspicuously for this policy in every detail. So, I am told, is the Picayune. The Progressive Union, a commercial organization of great power and influence in New Orleans, has declared itself for it. The State Legislature of Louisiana has declared itself for it. A reclamation association has been organized in that State, which has been taking up a propaganda for the development of this policy.

I wish, in support of this statement, to have the Secretary read from the New Orleans Item an article headed "Newlands bill versus the 'levees only' policy," and also an editorial in the same paper, entitled "Levees only a narrow policy."

The **President** pro tempore. Without objection, the Secretary will read as requested.

(The Secretary read as follows:)

[From the New Orleans Item, Feb. 23, 1913.]

NEWLANDS BILL VERSUS THE "LEVEES ONLY" POLICY—THE PART THE RAILROADS TAKE—WALTER PARKER TAKES ISSUE WITH JOHN A. FOX—URGES BROAD POLICY THAT WOULD TREAT VALLEY PROBLEM AS A WHOLE FROM SOURCE TO MOUTH AND ENLIST NATIONAL SUPPORT.

That something is radically wrong with the levee system as a means of protecting the fertile lowland farms from floods and inundation is clearly evident, and the Nation can not do better than turn its attention to the solution of the problems involved in the interest of all the people of all the States. The slogan of the Nation should be "after Panama the Mississippi River."

During 200 years the dogma of levees only has reigned supreme. Levee advocates, engineers, and contractors have had the field all to themselves. An enormous system, made up of many levee boards and a huge aggregate tax income, has been built up. The Federal Government has contributed tens of millions, and the State of Louisiana alone has contributed some $50,000,000 for the building of levees alone.

Yet so imperfect is the protection against floods which the expenditure of all these millions produced that in the year 1912 fully $200,000,000 in damage was done as a result of broken levees and overflowed farms and towns, and the same disaster has, to a lesser extent, been repeated in the same way in the early part of 1913.

TWO SCHOOLS OF THOUGHT.

Two schools of thought and two sets of men are now engaged in an effort to induce the Federal Government to solve the problem.

One set—the old school thinkers—are domiciled at Memphis under an organization entitled "the Mississippi Valley Levee Association."

The other set—the new school thinkers—are domiciled at New Orleans under an organization entitled "The National Reclamation Association," which was formed as the National Irrigation Association in 1899.

According to Mr. John Fox, secretary-manager of the Mississippi Levee Association, which is advocating a continuation of the "levees only" policy, his organization has secured "the enthusiastic support of all the railroads interested in flood protection; in fact, the railroads, the telephone and telegraph companies, and the great corporations with property subject to flood have contributed heavily to the income of the association."

According to Mr. George H. Maxwell, executive director of the National Reclamation Association, which is advocating the nationalizing of the river by the Federal Government and the control of its floods by the Federal Government through the building of levees and the revetment of caving banks, supplemented by the control of the source streams in order that levee-breaking floods will no longer be permitted to form—business men, manufacturers, and taxpayers to the extent of more than 1,000 have been enlisted in the support of the National Reclamation Association's campaign, but no railroad is helping in any way.

CAUSE AND EFFECT.

In Egypt the British Government has harnessed the Nile by constructing the Assuan Dam, and the waters of that river no longer flood the farms when moisture is not needed, but instead are conserved and used to irrigate them when moisture is needed.

In the Salt River Valley of Arizona, the Federal Government has constructed the great Roosevelt Dam, which gathers the freshet waters of the Salt River, Conserves them, and uses them to irrigate the dry lands of a large territory. Below the dam the Salt River is now always peaceful and quiet.

THE NEWLANDS BILL.

The advocates of the Newlands bill say that the supplementing of well-built levees by such practical source stream control in the Mississippi River watershed as the building of dams similar to the Roosevelt and Assuan Dams, and the use of the impounded waters for the irrigation of arid lands, for the creation of power, and for the feeding of stream flow in the dry season, augmented by a practical national policy of reforestation, will at one time put an end to levee-breaking floods and overflows in the low country, make the rivers navigable all the year round, and create an enormous asset of power, of timber, and of soil.

These people wisely say that the problem of the river is national, not local, and that no practical solution can come except through treating the rivers as units from sources to mouths. And they explain the opposition to such a policy as due to the fact that under it the water-power sites would become a profit-paying asset of the taxpayers rather than the property of speculators and great private interests; that source stream control will mean plenty of water in the streams on which to float boats which will compete with the railroads in the transportation of commerce. They add that it will put an end to the political pork-barrel method of appropriating Federal money for river improvement; that it will coordinate the endeavors of the Government to promote the welfare of all the people in the interest of lasting national prosperity.

RAILROADS' PART.

For these reasons the managers of the National Reclamation Association's campaign of education say the railroads and great vested interests of the country are opposing, not aiding, them.

On the other hand, the "levees only" people, who have announced that their chief support is supplied by the railroads, in an interview with Mr. John A. Fox, published by the New Orleans Item of February 21, "in effect" says: "The levees—levees, and nothing but the levees and revetment to protect them—for the Mississippi and for the Mississippi alone. Cut out the chimerical schemes. Don't get tangled up with navigation and reservoirs and conservation. Combine on something practical that can be put through now, when the country is aroused and ready to act."

The people of the Ohio Valley, who suffer, according to the best authorities, from flood damage averaging $50,000,000 a year, will hardly back up the levees-only policy advocated by Mr. Fox, which asks for protection for the Mississippi Valley alone.

Nor will the people of Nebraska, who were flooded last year, and the people of the entire Missouri River watershed, whose prosperity will be greatly promoted by a policy that provides a way to use the freshet waters at home for irrigation, power, and navigation, and at the same time aid in preventing destructive floods lower down, approve a levees-only policy.

In the North and East there are many manufacturers who will gladly urge their Senators and Congressmen to vote for a measure that will promote the general prosperity through river regulation, but will urge them not to vote for the appropriation under a political pork-barrel method of Federal money for the continuation of a levees-only policy.

There are the people of other great river valleys. They also have problems in their own sections. Their rivers often flood the lowlands, and an abundance of water needed by the dry-land farmer annually goes to waste. They also need navigable rivers all the year around, not floods at one season and dry beds at another. True, their problems are not nearly so acute as is that of the people of the Mississippi Valley, but will they view with pleasure any move that purports to solve Missisipi Valley problems but which does not even establish a principle or hold out a hope of at some time in the future solving their own problems? And there are people in the valleys of the Colorado, the Sacramento, the San Joaquin, and other great rivers.

All these elements are interested in the broad policy, not in the narrow policy. All have influence; all have votes in Congress.

For these reasons the new-school thinkers advocate legislation that while providing for a complete and adequate levee system, with revetted banks where needed, to be built and controlled by the Federal Government, will also provide for the prevention of flood formation in a way that will permit the people of the up country to turn now wasted flood water which menaces the low country into an up-country asset, out of which the up-country people may make money, while the low-country people enjoy immunity from floods and overflows and make their crops in peace.

WALTER PARKER.

[First editorial in the New Orleans Item, Feb. 23, 1913.]

"LEVEES ONLY" A NARROW POLICY.

Quite naturally, when John A. Fox, secretary-manager of the Mississippi Levee Association, belittles the Newlands bill and objects to "getting levees tangled up with chimerical schemes for reservoirs, or with any navigation program"—Walker Parker, proponent of the National Reclamation Association, which seeks to treat the "problem of the valley" as a whole, from the watersheds to the jetties, rises to object.

The dispute between the two associations, the division of sentiment among those most vitally interested, which that dispute has created, is an unhappy phase of the whole great situation involving the Mississippi Valley.

It has a precedent in recent history: The bitter quarrel between the advocates of the Nicaraguan route for an interoceanic canal and the friends of the Panama route. That quarrel postponed for 15 years the construction of the waterway between the Caribbean and the Pacific. And that quarrel was kept alive largely by the sinister activities of the transcontinental railroads. Only when Theodore Roosevelt smashed precedent and proprieties in grabbing the Canal Zone did the quarrel end and the Fabian fight of the railroads suffer final defeat.

It is not unfair in this connection to mention that the railroads of the valley are enlisted with the "levees only" association, and that most railroad men belittle and decry, as does Mr. Fox, any broader plan which includes insistence on headwater conservation and navigation maintenance with the plea for levees.

The construction of an interoceanic canal threatened the monopoly which the railroads held on commerce east and west across the United States. The railroads skillfully delayed when they could no longer openly fight the plan.

The "watersheds to jetties" program for handling the valley problem threatens the monopoly which the railroads now possess on the north and south commerce of the central United States—because it includes maintenance of year-round navigable water wherever possible on the Mississippi and its tributaries. And the railroads of the valley are identified with the rival movement which insists on "levees only."

In blunt truth the railroads centering in New Orleans or running through the valley would seem to have many men powerful in their councils who would much prefer to see their roads stopped by water once or twice a decade than to see the rivers from Kansas City, Pittsburgh, Minneapolis, and St. Louis bearing traffic to the Gulf through 12 months of every year.

When such conditions rule it is well and wise for those whose primary and intermediate interests lie in quick betterment of the southern levees and a lightening of the levee border on southern-flood districts to watch with care how far they commit themselves to the "levees only" program.

True, in the lower valley we want "levees first," because we have vital need, but if we say "levees only" we assume an attitude not to be best defended. Our people, our levee boards do well to help all that helps levees—but all is not helpful that avows friendly aid, and that is frequently to be doubted which protests too much of exclusive friendship.

The Newlands bill as originally drawn may not be perfect. Doubtless the urgency of the situation, disclosed by the flood of 1912, preaches the need for an amendment to it which will provide for immediate levee construction through the lower valley by Federal means.

But the Newlands bill, amended to that end, or legislation along kindred lines, which looks to one coherent, synthesized solution of the tremendous, interrelated, complex group of questions that have come to be known as the "problem of the valley," offers the widest, the broadest, and the best program for those in the lower valley to support.

Such a program binds together in unity of interest every element—barring the railroads—of 31 States, from the watersheds to the Gulf. A lesser program—a "levees only" program—must inevitably suffer the charge of sectionalism, no matter how strong the plea for justice based on the fact that the lower valley has to bear the brunt of waters from a vast and distant region.

Common sense teaches if engineers disagree, that the problem is a unit problem, no matter how widely separate on the surface its various phases seem. And if it is a unit problem—the best solution is that one which treats it as such.

To seek to handle Mississippi River floods in this day by restricting activity to levee building on the lower reaches, rather than by storing, guarding, using, regulating the waters from the sources to the mouths, would seem in the light of world-wide history to be the apotheosis of narrowness and shortsightedness.

It would be treating a loathsome disease by disinfecting its sores instead of by cleansing the blood.

Mr. NEWLANDS. It will be seen, Mr. President, from these newspaper extracts right in the region represented by the Senators on this floor who have been most contentious against the amendment which I have offered, there is growing up a strong organization for the support of the bill. An organization has been effected in the region referred to in this newspaper article, strongly backed by public sentiment and inimical to the narrow policy which has been hitherto and which is now being pursued by the Levee Association of the South, represented by Mr. Fox, namely, that the southern representatives should confine themselves to the perfection of the levees alone and should not be diverted into dreams, so characterized, relating to the promotion of the only purpose which Congress can constitutionally serve, the promotion of transportation by a perfected navigation.

Reference is made in these articles to the sources of the opposition to the policy which I am now advocating, namely, that the railway systems of the valley are unwilling to see any part of their patronage turned over to the water carriers, and a historical reference is made in this article to the well-known fact that for 15 years or more the transcontinental railroads of the country, through a mistaken sense of their own interest, opposed the adjustment of the Isthmian Canal question. It is a matter well known as a part of our legislative history that the deterrent influence throughout that entire agitation was mainly that of the transcontinental railways, which complicated us in our purpose, not only by dividing the friends of an Isthmian Canal, but by creating complications with Central American countries in such a way as to long deter the final solution of this important question.

We find ourselves confronted by the same difficulty with reference to our waterway development. We have now the long-sought-for link between the Pacific and the Atlantic and the Gulf coast, the Panama Canal approaching completion. One of the great purposes of the perfection of that link was to tie together the water-transportation systems of the Pacific and the Atlantic coasts. It will never serve this high purpose until those waterway systems upon both coasts are perfected. The railway systems can deter as much the ultimate accomplishment of the purpose which we had in view when we started to construct the Panama Canal by delaying the development of the waterways systems of the Atlantic and Pacific and Gulf coasts as they could by delaying the construction of the canal itself.

Prominent railway men to-day already agree that in the end the Panama Canal will be a great blessing to them, that through it the great Pacific coast will become greatly populated and enriched, and that the local carriers there connected with the great transcontinental systems will read a rich harvest out of the substituted and enlarged local traffic in the place of the transcontinental traffic they have hitherto enjoyed.

But the policy of a railway system is always present advantage rather than the long view that gives advantage in the future, and to-day the railway systems of the Mississippi Valley are opposed to the development of the waterway policy, unwisely, so I believe, because the waterways will simply be the carriers of the bulky and cheap products, and the costly products that will pay high rates of freight will be so vastly increased through the general production as to give those railways a larger increased profit by reason of the substituted traffic. But the vision is necessarily contracted. The managers of to-day wish to reap the harvest of the day. They are not content to pursue a policy by which other managers will reap the harvests of the future.

So we find this levee organization perfected in the South charged by this newspaper with being supported by the railways themselves, urging the narrow and contracted policy of levee building only and warning the people of the Mississippi Valley against the acceptance of so-called chimerical ideas that involve the treatment of the river as a unit and its perfection, among other things, as an instrumentality of transportation.

So we are to witness now right in the Mississippi Valley the distracting contentions regarding the development of this policy that prevailed so long with reference to the completion of the Panama Canal, a great national policy antagonized by special interests, not taking the long view of their interest in the future, but taking only the contracted and narrow view of immediate advantage and profit.

There are some men engaged in the transportation system who have a sufficiently broad vision to realize the benefit that will come to the railroads themselves in that region from the development of the Mississippi Delta, from the vast population that will flock there and the great wealth that will be produced there. Some of these great transportation managers have spoken, and have spoken vigorously, upon the subject, and I shall seek to put some of their utterances in the Record. But, as a rule, they favor the development of the rivers that will protect the land; they oppose the development of the rivers that will accomplish the only constitutional purpose which a national government can carry out—their development as national instrumentalities for interstate transportation.

Mr. President, the best evidence of this hostility is the history of river development. Suppose the railroads had taken the long view, that population and wealth would be so developed as to give them a plethora of the higher and more costly traffic compensatory of the loss of the cheap and bulky traffic; suppose they had taken that view and given this great waterway movement the aid of their cooperation, with the intelligence of their engineers and constructors applied to the solution of this great problem, do you think the waterway development of the Mississippi would have been such as it has been during the last 40 years? Would you have seen the successful completion of the bank protection of the Missouri River for 35 miles under a Missouri River commission, and then the abandonment of it by the National Government? Would you have witnessed the expenditure of hundreds of millions of dollars upon the Mississippi River without the increase of transportation? Would you have seen a waterway system developed without transfer facilities, without terminal facilities, without cooperation with the rail and with the ocean carrier?

Oh, no; the great railway managers of the country, the great railway engineers and the great railway constructors of the country, had they been really in favor of the development of water carriers, would have acted in such a way as to produce the result that has been produced in Germany, where under the patronage of the Imperial Government itself all three classes of transportation—rail, water, and ocean transportation—have reached the highest development and cooperate with each other for the common good.

The very fact that this great enterprise of the development of the Mississippi River and its tributaries has not been successful in promoting transportation is an evidence of the deadly hostility of the railway carriers to the development of that transportation. It is unnecessary that anyone should smile at the suggestion that the railway carriers are strong in their opposition and effective in their antagonism to the development of the perfection of our water carriers.

Mr. President, these railway carriers are exceedingly potential in politics. They are not so potential now, I am glad to say, as they used to be. I do not mean to say that they control legislators, but a legislator will hesitate long before he arouses the deadly antagonism of the railway carrier in his vicinity. Let him make himself active in a propaganda which is either directed against their interest or inferentially affects it and he finds secret opposition springing up to him everywhere. He finds a candidate against him at the primaries; he finds strong candidates against him in the conventions, unconsciously moved by this great controlling force; and the man who really wishes to accomplish his aims and serve the public and to make his life a sacrifice to public duty feels that if he runs up against this powerful antagonism he will lose all opportunity for usefulness by being deprived of the position which alone makes him useful. So, many honorable and conscientious men feel unwilling to take upon themselves the burden of a propaganda, knowing that they will be opposed by a great and powerful interest which can raise antagonism to them personally by distracting the councils of the party, and which can direct against them popular candidates with a view to embarrassing their elections.

I have no hostility whatever to the railroads of the country. I believe in doing everything that is necessary to develop railway transportation. I have been opposed to their participation in politics, but I have realized that conditions were such oftentimes as to force them into politics. Between the power of taxation on the one hand and regulation on the other many of them have doubtless felt that they might be ground to destruction. They have doubtless thought it necessary to influence and direct and sometimes control public movements that threaten them with destruction.

So far as my public career is concerned, all my efforts in the way of regulation have been with a view to protecting the railroads themselves as much as the public, to protect them from public spoliation as well as the public from extortion and oppression. I believe that the time is now rapidly approaching, through the wise exercise of the taxing power and of the regulating power by the States and of the Nation, when the railroads will practically be out of politics, and they will be much more prosperous under those conditions than they have been under conditions of constant political antagonism. I do not blame them for pursuing policies that affect their interests; I do not blame them for opposing public policies, which may be prejudicial to their interests; I simply point out the fact that their interest in the future is one thing and the interest of to-day is another, and that in pursuing the interests of to-day they may be antagonizing the interests of the future. The interests of to-day would lead them to destroy and hamstring the water carrier, but the interests of the future would lead them to the highest development of the water carrier, whether on the river or on the ocean.

I simply refer to the policies pursued by the railroads, not with a view to denunciation but simply with a view to calling their attention to what I would regard as a wise policy upon their part, and that is to take the long-distance view of this question and to unite with every community and with every State and with the Nation in the development of policies that will increase their population and their wealth, and thus contribute to the success of their activities, instead of antagonizing a great public policy with a view merely to present advantage and obstructing and impeding the progress of great policies intended for the development of the entire country.

Mr. President, I said that this policy of river regulation from source to month, including the tributaries and including the development of all the related uses of water, was a policy that received public approval, and I wish to have read some utterances upon this subject.

First, I will refer to the utterances of the gentleman who on the 4th of March will take his seat in the presidential chair, Hon. Woodrow Wilson. In the following telegram he declared his views upon this important question:

SEA GIRT, N. J. *September 30, 1912.*

Hon. FRANCIS G. NEWLANDS,
President National Irrigation Congress, Salt Lake, Utah:

Please express to the National Irrigation Congress my hearty approval of the policy it is met to promote, and especially of the policy of supplementing bank and levee protection by storage of flood waters above for irrigation and water power, turning floods from a menace into a blessing and at the same time abundantly feeding navigable waters.

WOODROW WILSON.

How admirable this expression; in a few words condensing everything that can be said upon the subject, everything that has been said in the party declarations, in the resolutions of chambers of commerce and boards of trade and waterway associations. He refers to supplementing bank and levee protection. The President elect has no fear, as some of our Senators from the lower Mississippi seem to have, that bank and levee protection will be abandoned if this enlarged policy is entered upon. The President elect does not speak of diminishing bank and levee protection; he speaks of supplementing it, and supplementing it by holding back floods that vex its banks and threaten its levees with destruction above, and turning them, as he so aptly terms, from a menace into a blessing by application to the irrigation of the great arid area of the country and by the development of water power.

I ask the timid men of the South and of the Mississippi Valley, representing conscientiously as they do the interests of their constituency, to take courage from the utterances of the President-elect that there is a guarantee of the continuance of the present system of bank and levee protection. Nay, more; it is an assurance that it will be prosecuted so that it will accomplish what they so much want, and the President-elect will pursue this policy, backed by the declaration of his party, and by the unanimous support of his party in both Houses. We are simply preparing the way now by such action as this on this bill in harmony with his words for the greater and larger fulfillment of the future.

Mr. President, what were those declarations of the Democratic Party? And what were the declarations of the other parties—the Republican Party and the Progressive Party?—the feeblest utterance of all being that of the Republican Party, and yet a decisive utterance; the strongest utterance of all being that of the Progressive Party in the last campaign, or at all events equaling in strength the declaration of the Democratic Party; and those two parties represented almost the unanimous vote of the people of the United States. What were their declarations? What was the declaration of the Democratic Party in its platform of 1908?

Mr. President, I will ask the Secretary to read the declarations on this subject of the platforms of the Democratic Party, the Republican Party, and the Progressive Party in 1908.

The PRESIDENT pro tempore. Without objection, the Secretary will read as requested. Does the Senator desire the platform declarations read of 1908 or 1912?

Mr. Newlands. The declaration in 1908 is the specific one of the Democratic Party. I should like that read, and also the planks of the platform in 1912.

The President pro tempore. Of both parties?

Mr. Newlands. Of the three parties.

Mr. Smoot. Will the Senator be satisfied with having them printed in the Record, without reading, in connection with his remarks?

Mr. Newlands. I prefer to have them read.

The President pro tempore. The reading will be proceeded with.

(The Secretary read as follows from the Democratic platform of 1908:)

WATERWAYS.

Water furnishes the cheaper means of transportation——

Mr. Ashurst. Is that the portion of the Democratic platform relative to waterways?

Mr. Borah. That is the Prohibition platform. [Laughter.]

The President pro tempore. It is the Democratic platform of 1908. The reading will proceed.

The Secretary. The extract is as follows:

DEMOCRATIC PLATFORM 1908—WATERWAYS.

Water furnishes the cheaper means of transportation, and the National Government, having the control of navigable waters, should improve them to their fullest capacity. We earnestly favor the immediate adoption of a liberal and comprehensive plan for improving every watercourse in the Union which is justified by the needs of commerce; and to secure that end we favor, when practicable, the connection of the Great Lakes with the navigable rivers and with the Gulf through the Mississippi River, and the navigable rivers with each other, by artificial canals, with a view of perfecting a system of inland waterways to be navigated by vessels of standard draft.

We favor the coordination of the various services of the Government connected with waterways in one service, for the purpose of aiding in the completion of such a system of inland waterways; and we favor the creation of a fund ample for continuous work, which shall be conducted under the direction of a commission of experts to be authorized by law.

The Democratic platform of 1912 reads:

DEMOCRATIC PLATFORM.

We renew the declaration of our last platform relating to the conservation of our national resources and the development of our waterways. The present devastation of the lower Mississippi Valley accentuates the movement for the regulation of river flow by additional levee and bank protection below, and the diversion, storage, and control of the flood waters above, and their utilization for beneficial purposes in the reclamation of arid and swamp lands and the development of water power, instead of permitting the floods to continue, as heretofore, agents of destruction. We hold that the control of the Mississippi River is a national problem. The preservation of the depth of its water for the purpose of navigation, the building of levees to maintain the integrity of its channel and the prevention of the overflow of the land, and its consequent devastation, resulting in the interruption of interstate commerce, the disorganization of the mail service, and the enormous loss of life and property, impose an obligation which alone can be discharged by the General Government.

To maintain an adequate depth of water the entire year and thereby encourage water transportation is a consummation worthy of legislative attention and presents an issue national in its character. It calls for prompt action on the part of Congress and the Democratic Party pledges itself to the enactment of legislation leading to that end.

We favor the cooperation of the United States and the respective States in plans for the comprehensive treatment of all waterways with a view of coordinating plans for channel improvement with plans for drainage of swamp and overflowed lands, and to this end we favor the appropriation by the Federal Government of sufficient funds to make surveys of such lands, to develop plans for draining the same, and to supervise the work of construction.

We favor the adoption of a liberal and comprehensive plan for the development and improvement of our inland waterways with economy and efficiency, so as to permit their navigation by vessels of standard draft.

The Republican platform of 1912 reads:

REPUBLICAN PLATFORM.

The Mississippi River is the Nation's drainage ditch. Its flood waters, gathered from 31 States and the Dominion of Canada, constitute an overpowering force which breaks the levees and pours its torrents over many million acres of the richest land in the Union, stopping mails, impeding commerce, and causing great loss of life and property. These floods are national in scope, and the disasters they produce seriously affect the general welfare. The States unaided can not cope with this giant problem; hence we believe the Federal Government should assume a fair proportion of the burden of its control, so as to prevent the disasters from recurring floods.

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We favor a liberal and systematic policy for the improvement of our rivers and harbors. Such improvement has been made upon expert information and after a careful comparison of cost and prospective benefits.

The Progressive Party platform of 1912 reads:

PROGRESSIVE PARTY PLATFORM.

The rivers of the United States are the natural arteries of this continent. We demand that they shall be opened to traffic as indispensable parts of a great nation-wide system of transportation in which the Panama Canal will be the central link, thus enabling the whole interior of the United States to share with the Atlantic and Pacific seaboards in the benefit derived from the canals. It is a national obligation to develop our rivers, and especially the Mississippi and its tributaries, without delay under a comprehensive general plan covering each river system from its source to its mouth, designed to secure its highest usefulness for navigation, irrigation, domestic supply, water power, and the prevention of floods. We pledge our party to the immediate preparation of such a plan, which should be made and carried out in close and friendly cooperation between the Nation, the States, and the cities affected. Under such a plan the destructive floods of the Mississippi and other streams which represent a vast and needless loss to the Nation would be controlled by forest conservation and water storage at the headwaters and by levees below, land sufficient to support millions of people will be reclaimed from the deserts and the swamps, water power enough to transform the industrial standings of whole States would be developed, adequate water terminals would be provided, transportation by river would revive, and the railroads would be compelled to cooperate as freely with the boat lines as with each other. The equipment, organization, and experience acquired in constructing the Panama Canal soon will be available for the Lakes-to-the-Gulf deep waterways and other portions of this great work, and should be utilized by the Nation in cooperation with the various States at the lowest net cost to the people.

Mr. NEWLANDS. Mr. President, this closes the action of the parties upon this subject. I wish to add that, in addition to party action upon this subject, the administration actively took up this question during Mr. Roosevelt's and Mr. Taft's incumbency. Mr. Roosevelt organized an Inland Waterway Commission. That commission, after a thorough investigation, made a report. That commission was composed of two Senators, two Representatives, the Chief of Engineers of the Army, the Chief of the Reclamation Service, the Chief of the Forestry Service, and the Chief of the Bureau of Corporations, which bureau had made a very extensive inquiry into all the conditions relating to waterway transportation, and the chief of which bureau was a valuable member of this commission.

On that commission served the now Senator, then the Representative from Ohio, Mr. Burton; the then Representative and now Senator from Alabama, Mr. Bankhead, former Senator Warner, of Missouri, and myself.

The result of our long investigation and inquiry was a unanimous report, with some modifications suggested by the Chief of Engineers of the Army. That report called for the policy which I have endeavored to outline, of cooperation between the services, cooperation between the various sovereigns affected, cooperation with municipalities, corporations, and individuals, with a view to a broad and comprehensive plan that would involve all the waterways of the country. It involved a large fund and continuous work, with the aid of this fund for a period of 10 years.

As I have already stated, the only difference between myself and the Senator from Ohio with reference to the conclusions arrived at by the commission was that I insisted that the whole policy had been so far developed as to have received practically popular indorsement, and that its successful execution involved the creation of a very large fund and giving practically a free hand, within the general range of the plans adopted, to the Engineer Corps and to the related services in their execution, with a view to preventing the exasperating halts that have thus far been made in waterway development through changes of view, through deficient appropriations, and other obstructions, my contention being that we should take hold of the matter vigorously, just as we took hold of the Panama Canal and just as we took hold of the reclamation work in the West, providing that the board charged with the execution should make no contract unless the money for payment was in the fund and within that limitation, giving them large freedom both in developing plans and in execution.

Whilst I think the view which I entertained was the correct one, and I still think so, and feel assured that ultimately Congress will come to a similar conclusion, yet the action which I now seek does not involve any such large powers to the River Regulation Board. Whilst the Waterways Commission was engaged in this inquiry and before it had concluded its labors I prepared a bill, which I presented simply as a tentative proposal, with a view to preparing the public mind for what I thought would be the final conclusion of the Waterways Commission. That bill was similar in its terms to bills which I have since introduced, though I think the bills introduced later are improvements upon the original. That bill was referred to the then Secretary of War, Mr. Taft, and was approved in all substantial details by Mr. Taft in a very comprehensive communication to the Committee on Commerce. I have not that communication available just now, but later on I shall ask to have it read.

Recently the Committee on Commerce called for the views of the chiefs of the various departments under which the services that relate in any way to water are organized—the Department of War, the Department of the Interior, the Department of Commerce and Labor, and the Department of Agriculture. I should like the Secretary to read the communications from the Secretary of Agriculture, the Secretary of the Interior, and the Secretary of War, which are upon the desk.

The PRESIDING OFFICER (Mr. Brandegee in the chair). Without objection, the Secretary will read as requested.

Mr. PERCY. Mr. President——

The PRESIDING OFFICER. Does the Senator from Nevada yield to the Senator from Mississippi?

Mr. NEWLANDS. Yes.

Mr. PERCY. Mr. President, without desiring in any way to be discourteous to the Senator from Nevada, and without wishing to inconvenience or to incommode him in any way, I shall object to the reading by the Secretary. It is being painfully forced upon the judgment of the Senate that, notwithstanding the protestations of the Senator from Nevada, that he does not wish to defeat this bill, he is engaged in pursuing, through what I may call a more or less organized filibuster, a course which may result, if successful, in the defeat of the bill. If the bill is sent back to conference, according to the opinion of those in the best position to judge, it means its defeat, just as surely as if the Senate should defeat it by a vote; and the course the Senator is pursuing would seem to be a little more than a desire fairly to explain his views to the Senate on this question, upon which he has so frequently addressed it. Therefore, as I have said, without desiring to inconvenience the Senator at all, I shall object to the reading by the Secretary.

The PRESIDING OFFICER. Objection is made to the request.

Mr. NEWLANDS. Mr. President, what was the statement of the Chair?

The PRESIDING OFFICER. The Senator from Mississippi objected to the reading of the paper requested to be read by the Senator from Nevada.

Mr. NEWLANDS. May I ask the Chair, is that subject to objection?

The PRESIDING OFFICER. The Senator may read it himself or the question may be submitted to the Senate whether the Secretary shall read it. Is it the wish of the Senator that the Chair shall submit the question to the Senate?

Mr. NEWLANDS. No; I will read it myself. In reply, however——

The PRESIDING OFFICER. The Chair will call the attention of the Senator from Nevada to Rule XI, which provides:

RULE XI.

OBJECTION TO READING A PAPER.

When the reading of a paper is called for, and objected to, it shall be determined by a vote of the Senate, without debate.

It is mandatory that the question shall be determined by the Senate; but the Senator can withdraw his request or read the paper himself, if he prefers.

Mr. NEWLANDS. I do. I shall proceed to state the substance of the various reports; but before taking up the reports I wish, in reply to the Senator from Mississippi [Mr. Percy], to repeat what I have already said, that I have no desire to defeat this bill. I do not regard it as a very perfect scheme of legislation, but I do not desire——

Mr. SIMMONS. Mr. President——

The PRESIDING OFFICER. Does the Senator from Nevada yield to the Senator from North Carolina?

Mr. NEWLANDS. Certainly.

Mr. SIMMONS. I am very much delighted to hear the Senator say that he has no desire to defeat this bill, and, in view of that statement, I would inquire of the Senator if he would be willing to agree that at some hour this afternoon we shall vote upon the question of recommitting the bill to the conference committee?

Mr. NEWLANDS. I am not prepared to state a time now, but I will take the matter under consideration and will communicate with the Senator later on.

Mr. SIMMONS. Will the Senator indicate whether he would be willing to fix any time during this calendar day for a vote on the question of the recommittal of the bill to the conference committee?

Mr. NEWLANDS. I am not prepared to say now. I want to see the subject thoroughly discussed. I have reason to believe that there are a number of Senators who want to discuss it, who firmly believe in this policy, and who think that it is only fair that the House of Representatives should have a chance to vote upon it. According to the statement of the Senator from Minnesota [Mr. Nelson], the House conferees put these amendments in quarantine and prevented them from being considered by a separate vote addressed to them in the House of Representatives, although the expression in the House at the time the conference was ordered was that before any final action was taken upon these amendments the matter should be referred to a vote in the House. I am simply urging a course that will result in the fair consideration of these amendments by the House under a rule, which I presume will limit debate and which will secure final action before the adjournment of Congress.

Mr. SIMMONS. Mr. President, I simply want to understand the position of the Senator. I understand the Senator to state that he wants this matter to go back to conference in order that it may be reopened and reconsidered with a view to sending it back to the House, so that there may be a vote upon his amendment. Is that the position of the Senator?

Mr. NEWLANDS. Yes; after a full discussion here.

Mr. SIMMONS. Then, Mr. President, that can not happen unless we do vote upon the question of sending it back to conference. If the Senator wants to accomplish that purpose, it seems to me that he ought to agree to a time certain for a vote, so that it may go back to conference and be submitted to the House if the conferees shall so decide.

Mr. NEWLANDS. I want to be assured, in the first place, that there is a full discussion in this body, so as to insure, if possible, a disagreement to this conference report. I do not want to have too early a vote upon this subject. A number of Senators have indicated to me that they wish to address the Senate upon it, and I do not want to foreclose them the opportunity.

Mr. SIMMONS. It must be manifest to the Senator that if he prolongs this discussion he will defeat the very object which he says he has in view.

Mr. NEWLANDS. I do not propose, Mr. President, to take any action that will prevent a consideration of these two amendments by the House after a reasonable debate there upon the merits; but I do not propose, at a time when the whole subject is of the highest importance as an educational matter, to lose the opportunity of impressing upon Congress and the American people that a policy which for years has been determined upon by the American people, as evidenced by the explicit declaration of party platforms, by public expressions of boards of trade and chambers of commerce, by the unanimous declaration of the congress of governors, and by the action of numerous waterway associations throughout the country, that that policy is to be put in quarantine by three conferees from the House of Representatives, and that the representatives of the people in the House are not to have the opportunity to consider or to discuss this question.

Mr. SHIVELY. Mr. President——

The PRESIDING OFFICER. Does the Senator from Nevada yield to the Senator from Indiana?

Mr. NEWLANDS. I do.

Mr. SHIVELY. I am very much impressed with what the Senator has just said; but it occurs to me that the conferees being the organ of the two Houses of Congress, it is our duty to leave to the House of Representatives the control over its own conferees. It seems to me it is within the function of the House to determine what its conferees shall do—to reject their reports or not to reject—and by its own affirmative action, if it desires to do so, to bring this matter back before the House. I never understood that it was the function of the Senate to determine by its procedure what the House shall or shall not consider.

Mr. NEWLANDS. Mr. President, it is the right of the Senate to insist upon legislation which it favors, and it is the right of the Senate to insist upon the consideration of legislation which it presents to the Congress of the United States, and it is the right of the Senate to insist upon it until that fair consideration is given. I am aware that this bill contains appropriations for a great number of projects in which Senators are interested—and when I say "interested" I mean, of course, a very proper interest, relating to the development of the regions they represent. But, owing to the fact that so many Senators and so many Representatives have in this bill interests affecting their constituencies, interests evidenced by substantial appropriations to be expended within their States or districts, the whole tendency is to disregard all questions that relate to general policies and to urge the passage of the bill with a view to securing to each Senator or Representative that which he individually desires. In this way we have a composite bill that represents no continuous of scientific policy.

The country has been intent for years upon putting the river projects upon the merit basis and taking them out of the patronage system.

Mr. STONE. Mr. President——

The PRESIDING OFFICER. Does the Senator from Nevada yield to the Senator from Missouri?

Mr. NEWLANDS. Certainly.

Mr. **Stone**. I should like to ask my friend if he is still addressing himself in advocacy of his amendments?

Mr. **Newlands**. Yes.

Mr. **Stone**. The Senator has presented the matter very exhaustively. I should like to know, because the Senator from Nevada is so entirely frank, whether he thinks he is about ready to submit it to a vote?

Mr. **Newlands**. I have already stated, Mr. President—probably the Senator was not present at the time—my views with reference to that matter. There are a number of Senators who wish to speak upon this subject.

Mr. **Stone**. Then will the Senator answer me frankly whether this number of Senators, cooperating with him, have determined to prevent the passage of this bill? If so, perhaps we had as well put it to the test in some way and abandon it and go on with something else instead of wasting what is left of this session in a filibustering experiment. Is that what the Senator and his associates are engaged upon, to prevent the passage of this bill unless certain things are done—unless his amendments, and perhaps the amendments of some other Senators, are agreed to? That is a straight question to the Senator.

Mr. **Newlands**. It is a very straight question.

Mr. **Stone**. The Senator is always so brave and fair that I think he, if any Senator, would make a direct answer to a direct question of that kind, so that the Senate may be informed as to the situation.

Mr. **Newlands**. Mr. President, the question is a direct one, and perhaps goes a good deal further than the Senator should expect an answer for; but I have no hesitation in stating my position.

There is no concert of action, to my knowledge, of purpose, regarding the final disposition of this bill. I have heard several say that the bill ought to be killed. I have not shared in that view. I have hoped that as the result of the discussion on this floor the Senate will disagree, with a view to compelling the House conferees to take a vote in the House regarding these amendments, after a fair discussion. So far, that is the length of my purpose, and I state it without, however, committing myself at all as to the future.

Mr. **Stone**. If the Senator will allow me, I express no decided opinion as to whether this is a wise bill or an unwise bill, whether it is good or bad, whether it ought to be defeated or not.

Mr. **Newlands**. I am trying to convince the Senator that it is a wise one.

Mr. **Stone**. But the Senator is too experienced in legislative procedure to doubt that the bill will pass substantially in the form in which it has been reported by the conferees or not pass at all.

There are on the calendar other things of a good deal of importance that we want to take up. Everyone recognizes that the Senator from Nevada, almost alone, and certainly with the cooperation of two or three others, can continue a debate indefinitely and defeat the passage of the bill. I think it is due to us to know what the situation is and what the purpose of the Senator is, so that the Senate, being advised, may govern itself accordingly, recognizing the power of the Senator and his associates to defeat the passage of the bill.

It may be that they would be doing a wise public service. I am not entering upon that question. I am simply desirous to know whether or not that is the purpose. If it is the purpose, then announce it, so that the Senate may be advised; and it may be that the matter can be in some way disposed of more promptly and laid aside, or something done with it, so that the entire business of the Senate may not be arrested in a contest of this character, the ultimate result of which is known to all.

I think we ought to deal frankly with each other here. The Senator from Nevada has been reasonably frank. He says he is not engaged in a filibuster. He says there is no agreement for concert of action. But it has been whispered around that other Senators—I have no authority to give their names—are prepared to follow with prolonged orations, which may be pertinent or impertinent to the subject in hand, as soon as the Senator from Nevada has exhausted his energy—and that would require a good while. We know what the Senator from Nevada can do if he makes up his mind. He can continue here for a good, long while yet.

If this is to be followed by other like speeches, I think we ought to know it, so that we may lay aside the bill or do something else with reference to it, so that other important business of the Senate may be proceeded with.

I submit to the Senator if that is not fair.

Mr. Newlands. Mr. President, the Senator uses the term "frankly" too often. I am always frank. I am frank now. My only purpose is to get consideration by the House of Representatives of these two amendments, and to take them out of the quarantine in which the Senator from Minnesota [Mr. Nelson] says the House conferees have put them.

Mr. Simmons. Mr. President——

Mr. Newlands. If the Senator will permit me, that is my purpose. I do not know what any other man's purpose is. I will state to the Senator that I do know of quite a lengthy speech that will be made in this connection, on this and related subjects, because the Senator wants frankness, and I give him my full knowledge.

There are some Senators on this floor who think it would be a good thing to have the bill beaten. The Democratic Party is coming into power on the 4th of March. It is fully committed to the policy for which I am contending, by party declarations and by the expressed convictions of its chief, which I have read. That is not my view. I would prefer to have this bill go through, as I do not want to embarrass Senators regarding appropriations in the bill in which their States and their districts are interested, and which, so far as I know, are unobjectionable. What I object to is the system. These two amendments look to the elaboration of a perfect system, and not at all to defeating the bill.

Mr. Simmons. Mr. President——

The Presiding Officer. Does the Senator from Nevada yield to the Senator from North Carolina?

Mr. Newlands. Yes.

Mr. Simmons. Mr. President, if the Senator from Nevada will pardon me, of course the Senator knows that it is necessary for the Senate to act first in sending this matter back to conference. After that is done, it is necessary for the House to act, in order that it may get back into conference.

I want to state to the Senator that I have been over to the House this morning and have held a conference with the conferees on the part of the House with reference to their ability to get this matter back into conference to-day, so as to have action by the two bodies upon the result of that conference. I will say to the Senator that they have advised me—all of them have stated the same thing—that in the present condition of the business of the House it would be a little difficult to get the matter up at all with a view to sending it back to conference, but that unless the matter goes back to the House during this afternoon it will be utterly impossible to secure any action on the part of the House in the way of sending it back to the conference.

So the Senator will see that if these gentlemen are advised correctly in the assurances and statements they have made to me, if the bill is to be gotten into conference again—and the Senator says that is his purpose—it is necessary that we shall act here in the Senate at some time during this afternoon. I appeal to the Senator, in view of that situation, to put some limitation upon this discussion, so that we may get a vote and the House may have an opportunity, at least, of letting the bill go back where the Senator says he wants it to go.

Mr. NEWLANDS. Mr. President, I will ask the Senator whether the conferees on the part of the Senate will consent to a disagreement and a reference of this matter again to the conferees?

Mr. SIMMONS. I suppose that is a matter for the Senate, Mr. President. The Senate would have to vote upon the question of whether or not they would send it back. We have no right to make an agreement in advance for the Senate. It is not a matter that will be submitted to the conferees, but one that will have to be submitted to the Senate. All I was suggesting to the Senator was that he let the Senate vote, so that the matter may get before the House, because it must be acted upon by both bodies before it can get back into conference.

Mr. NEWLANDS. Mr. President, if the Senate conferees will give their consent to a disagreement, with a view to having this matter go back to the conferees, in order that they may submit these amendments to the House, that is one thing; but as long as they do not consent to that, and the matter has to be determined by the Senate, it is exceedingly material that there should be a discussion here, in order that we may be able to convince the Senate that it is wise that it should disagree.

Recollect that we are not endeavoring here by these amendments to interfere with a single appropriation, either to increase or to diminish it. All we are asking is that the policies of the Democratic, Republican, and the Progressive Parties, as declared in their platforms, shall be carried out in the organization of a system through these amendments. That is all we are asking. So far as I am concerned, if a method can be devised by which these amendments will be submitted to the House I shall be content. If they should decide against them, the responsibility would rest upon them.

They are all members of the Democratic or the Republican or the Progressive Parties, and if they see fit to abandon the party declarations upon the subject and refuse their assent to these amendments which simply put in this bill the declared policies of all these three parties the responsibility will rest upon them and not upon me. But I think I am entitled, I think the Senate is entitled, and I think the American people are entitled to some expression of opinion on this subject from the House of Representatives; and they are above all things entitled to take this policy out of the quarantine that has been imposed upon it by the conferees of the House.

I stand for democratic government, for democratic expression, for the expression of the will of the people through their representatives, and I stand opposed to every system that proposes to impede and clog the efforts either of the people or of their representatives. The method here pursued smacks too much of the methods that have been pursued for a generation in Congress—methods which have been repudiated by the people; methods against which the people have raised their protest; methods which have created a storm of revolution throughout the entire country, so much so that every party organization is endangered.

A great policy, declared equally by the Democratic, the Republican, and the Progressive Parties, is outlined in the amendments which I have presented—the demands of the American people, indicated in every form of expression, from party declarations down to the declarations of legislatures, or boards of trade, of chambers of commerce, of waterway associations, of every form of organization that expresses public opinion; and yet we are told that three men, the servants of the House, can put this policy in quarantine, can put it in cold storage, and prevent it from being considered by the great House that they represent.

So long as that method is maintained I shall raise my protest against it, and I wish to continue my endeavor to convince the Senate of the United States that good government demands that this policy shall be taken out of cold storage and submitted to the judgment of the representatives of the people. Unless the Senate conferees agree to a disagreement and a reference back to the conferees, I am compelled, so long as I remain true to my convictions, to exhaust everything I have to say by way of argument and persuasion with the Senate itself.

I was endeavoring to point out that the individual interests of numerous Senators, like the individual interests of numerous Representatives, lead them, of course, to view with apprehension the defeat of this measure, which contains appropriations intended for the benefit of their States and their districts. It is, therefore, all the more necessary for the advocates of a great national policy, represented in these amendments, to bring to the attention of the Senate convincing reasons why they should not allow their individual interests and the individual interests of their States or districts to overpower them in the consideration of a great question of national policy, concerning which public sentiment is made up unanimously and only Congress remains unconvinced.

Mr. President, I quoted the utterance of Woodrow Wilson. I referred to the report of Mr. Taft as Secretary of War, indorsing in every way, in the fullest details, this policy. I now refer to the report of the Secretary of Agriculture, Mr. James Wilson. I shall not read his entire report. It is under date of April 4, 1912. He says:

"I believe it will be necessary, eventually, for the Federal Government, or the Federal Government and the States, or in some cases each State individually, to work out a comprehensive system of saving flood waters—the surplus waters that run away in spring and winter and during flood times in summer. This can be done, as it has been done in other countries, by arranging for a system of reservoirs beginning near the head of streams and continuing the reservoirs down the streams until all the advantage is secured that can be had from confining the waters for use on the land in dry times. I think the entry upon the subject is timely and wise, and any cooperation this department can extend will be cheerfully given."

What services in the Department of Agriculture relate to this question? First, there is the Weather Bureau, which is engaged all the time in the study of the question of precipitation. What is the origin of all these destructive floods in the lower Mississippi and the lower Sacramento and the San Joaquin? Why, the water that falls from the heavens. That is the source of all the difficulty. That water falls, so far as the Mississippi is concerned, over 30 States.

If it falls in immense volumes within a short period of time it creates a flood, and that flood makes its way to the small-source streams, to the tributaries, and through the tributaries to the main river, and through the main river to the Gulf, a cause of anxiety, a cause of destruction everywhere. The amount of water which would naturally fall in a period of six weeks may do no harm at all, and yet, if its fall is concentrated within one week, it may prove an agency of the largest destruction.

We can not control the clouds in their output, or at all events science has not yet discovered the method. The waters fall at their will as the result of a mysterious control which as yet we do not understand and which our scientific men are studying every day. We can not control the fall, but the question is whether we can not control or mitigate the run-off. If the entire area of the Mississippi Valley were put in concrete one can imagine the rapidity of the run-off, and one can imagine how destructive that run-off would be to the entire Mississippi Delta and to every State upon the banks of the Mississippi River.

I can imagine what the effect would be if the rapid run-off of the falling waters in the entire Mississippi Valley were concreted. Yet we have been steadily for years pursuing a course that provides increasing rapidity of the run-off. Nature itself has slowed down the floods through numerous intervening obstacles, forests, with the forest protection of leaf and moss and trees and porous soil absorbing the rain as it falls from the heavens and holding it in suspense, letting it out gradually into the tributaries, so that there is no violent flood. We have been destroying our forests. The great swampland areas constitute natural reservoirs in which the accumulated flood waters rest, making their way gradually to the main stream. In the upper reaches of these rivers we have been reclaiming these swamp lands, and we have been reclaiming them by increasing the rapidity of the run-off from them, thus increasing the momentum of the floods below.

Now, what does science propose to do under this system which the various parties have declared for and which is represented in this bill. Science will look to the protection of the forests.

We have already done it in a detached and unrelated way. We have determined to hold off the forest areas of the Appalachian and Allegheny Mountains and of the White Mountains, and we created a commission for their acquisition, a commission that is working in an entirely detached way from the Corps of Engineers of the Army and all the other services that relate to water. We quarantine these lands, making no study of the other scientific services of the country as to how they can best be utilized, not only for the development of timber, but also for the protection of the channels of navigable rivers. This measure provides that that National Forest Commission shall enter into coordination with the Board of River Regulation, and shall do teamwork with the other related services.

The Forestry Service is in the Agricultural Department just as the other bureau is. Then we have another service in that department called the Bureau of Soils. It has problems that relate to our navigable rivers. One of the great objects of the Bureau of Soils is to conserve the soils themselves and prevent them from being washed into the rivers and thence into the bays and gulfs and oceans. We all know what erosion of soil means. The richest part of the soil is always the most friable, the most easily disturbed, and the most easily moved. That is characteristic of alluvial soil. The least beneficial portions of the soil are the portions that are hard, that resist the impact of the water, stone, clay, etc. So the Bureau of Soils has been engaged in the study of the effect of rapid run-off upon soils and soil erosion and the destruction of cultivable areas.

One thing that the bureau has pursued which has been of vast benefit has been the introduction of topographical plowing. Instead of permitting fields to be plowed, as they used to be plowed, in furrows oftentimes stretching up and down the hill, each furrow in itself a conduit for the carriage of alluvial soil into the tributaries of great rivers or the rivers themselves, they have introduced a system of topographical plowing, so that each furrow, instead of running up and down the hill, runs upon the same level around the hill. Each furrow in this way becomes an obstruction to soil erosion instead of a facilitation of the soil erosion, and not only as an obstruction of soil erosion, but, as the Senator from Oklahoma [Mr. Owen] says to me, an obstruction of the floods themselves, for each furrow in that case becomes not a conduit for the waters that fall from the heavens but a reservoir of the waters that fall from the heavens.

That bureau is engaged in a study of all the questions which relate to plants and the amount of water they require. There are some plants that absorb a little water; there are some plants that absorb vast quantities of water; but all plants that absorb water can be so developed in their cultivation as to absorb large quantities of these flood waters and carry them through their arteries and veins and yield them again to the influence of the sun, by which agency they are dissipated. Thus they constitute an obstructive force in this constant flow of the floods from the hills and the farms into these great navigable areas below, where they become agencies of destruction.

Is not the cooperation of the Agricultural Department of value, then, in this great work, when it has three bureaus devoted in varying degree to the conservation of water and the development of water?

The scientific services that are under the control of the Department of Agriculture, whose specialties relate to the use of water, we propose shall cooperate in this policy, which has received the approval of all the parties of the country and which has the indorsement of public sentiment almost without an expression to the contrary, Congress alone voluntarily remaining unconvinced, or rather that portion of Congress constituting the House of Representatives, for the Senate has expressed itself by a unanimous vote.

Now, what does the Department of the Interior say, headed by Secretary Fisher? I will not read his entire report to the Committee on Commerce, but, referring to a bill introduced by myself known as Senate bill 122, he says:

> This bill is based upon two principles which have not been hitherto generally recognized in the construction of public works for river improvement. These principles are, first, that a river from its source to mouth, with all of its tributaries, is a unit in all its most important physical and functional characteristics.

I continue reading from the report of Secretary Fisher upon this bill. Relating to the river, he says:

> It should therefore be dealt with as a whole and not piecemeal, and in dealing with it for any single use, such as navigation, we should not lose sight of the other uses to which it can be put, such as water supply, irrigation, power, drainage, etc. River improvement should harmonize these uses, treating the river system as a unit for this purpose, and should provide for the cooperation of the Nation, States, and individuals to that end. The same principle applies, only in less degree, to the unification of all river systems into one comprehensive whole.

That is what they do in Germany and France. They not only treat the river streams in the most comprehensive way, but they connect them with each other by artificial canals, so that you can, through a system of connected waterways, go from one part of the country to almost every other part of the country.

> The second principle—

Secretary Fisher says—

> The second principle is that this work of waterway improvement in its details should be guided and determined as an administrative and not as a legislative matter, and therefore that a large fund should be provided and replenished from time to time as may be necessary, this fund to be expended at the discretion of a competent administrative commission of experts without specific appropriations or limitations, except of a broad general character, by Congress. The proposed commission is to consist of the chiefs of the Federal bureaus whose duties are now concerned with specific phases of the problem, together with specially qualified experts to be appointed by the President.

He says:

> I am heartily in accord with these principles and believe that legislation embodying them should be enacted. I have not attempted, however, to criticize the bill in detail.

It will be observed that Secretary Fisher takes up the cudgels for the contention which I originally made in my additional report as a principle of the Inland Waterway Commission. He says that, in order to carry out this system adequately, it will be necessary to regard it as an administrative and not a legislative matter.

Secretary Fisher, in reporting upon the river regulation bill which I introduced in the Senate, indorses most emphatically the prosecution of teamwork on the part of the scientific services and teamwork on the part of the sovereignties affected; and he insists that all the details should be guided and determined as an administrative and not as a legislative matter, except as to the general details and authorization. He takes the view which I originally took in my report as a member of the Inland Waterways Commission, that in order to make this great work effective it must be consecutive, that it must be prosecuted with energy for at least 10 years, that a large fund of at least $50,000,000 annually must be provided, and that large and extensive powers should be given to a board of experts, both in plans and in works; in other words, that we should pursue the methods which we have pursued in the only two successful public works that ever have been conducted by the Government—the Panama Canal and the work of the Reclamation Service.

The next indorsement comes from the Secretary of War, Mr. Stimson, who, in a letter of January 27, 1913, gives his views, practically indorsing in all its details the policy to which I have referred. I shall not attempt to read the entire report, for it runs at some length, but will simply quote detached portions.

He says:

> Our conception, therefore, of what constitutes a navigable river and our appreciation of the various elements which enter into its development have been greatly widening. We see now that the problem of developing and preserving its navigability is no longer necessarily confined to removing obstructions in that part of the river in which navigation exists, but may extend to countless remote branches and sources of supply. We also see how the improvement of the river may be intimately connected with and dependent upon another development—that of water power—which formerly we may have regarded as a thing quite separate and apart.

He takes up the various uses to which the river can be put and shows that the development of all will diminish the proportionate cost of each, and that it is only by uniting the development of these various uses that we can secure the cheapest and most efficient promotion of navigation.

Mr. President, what bureaus have these two departments, the Interior Department and the War Department, that relate to water? The War Department has a Corps of Engineers of the United States Army, whose work thus far has been confined to channel improvement, bank protection, and levee building. In the Interior Department we have the Reclamation Service, whose work has been confined to the upper parts of our navigable rivers and branch streams, their work being in connection with the reclamation of arid lands. Then we have the question of water-power development, which, in a measure, has fallen under the jurisdiction of both these departments—the Interior and the War Departments—the jurisdiction over water-power development in connection with irrigation having fallen under the control of the Reclamation Service and the jurisdiction over water-power development in connection with channel regulation having come within the jurisdiction of the War Department. Then we have in the Interior Department the great Geological Survey, which for years has been making a study of the waters of the country with a view not only to their development but to their conservation. The Geological Survey was the source and the origin of the Reclamation

Service. It is still, under large appropriations given by the Government, conducting these studies. Yet we find that these various services which relate to the use of water, either the navigable rivers or their tributaries, have never been brought into relations of cooperation with each other, but, on the contrary, they view each other askance and oftentimes with jealousy, each guarding its jurisdiction against the invasion of the other.

What possible objection can there be to the union of all these services under a river-regulation board, with a view to the effective regulation of the river?

Mr. President, the Senator from Oklahoma [Mr. Owen] desires the floor for the purpose of considering one branch of this question, and I will yield the floor to him for the time being.

PUBLIC BUILDINGS BILL.

During the delivery of Mr. Newlands's speech—

Mr. SUTHERLAND. Will the Senator from Nevada yield to me to submit a conference report.

Mr. NEWLANDS. Certainly.

* * * * * * *

Proceedings of March 2, 1913.

RIVERS AND HARBORS BILL CONFERENCE REPORT.

The Senate resumed the consideration of the report of the committee of conference on the disagreeing votes of the two Houses on the bill (H. R. 28180) making appropriations for the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes.

Mr. NEWLANDS. Mr. President, I have opposed the adoption of the conference report regarding the river and harbor bill not because I wish to defeat the bill, but because I wish to secure a disagreement in order to compel the House conferees to present to the House itself two amendments offered by myself and adopted by the Senate without a dissenting vote, embodying a policy which has been declared for in all the party platforms. I never intended to press the discussion to a point where the life of the bill would be endangered, and therefore I have assented to this arrangement regarding a vote at half past 2. I do not wish to take up the time of the Senate with the discussion, but I urge the Senate to disagree to this report, and thus compel the conferees of the House, who are acting as the servants of the House, to submit to that body the consideration of this important question, which, as yet, the House has not had an opportunity to act upon.

Mr. BURTON. Mr. President, I say with some reluctance that I can not vote for the adoption of this report. The bill contains too many objectionable items. It is a part of the progress in the wrong direction which has been made in the last three or four years. There have been many excellent features in the management of our public works in that time. The engineers have made careful examinations, but we are going far away from business principles. We are making a great multitude of appropriations for numerous rivers and harbors and we are not pressing improvements to speedy completion.

Again, the selection of items here is too much made by favor. If there is any strong pressure behind an item, I do not care how objectionable it may be, it finds its way into this bill. I do not believe, Mr. President, that the infirmities and defects of legislative government have ever been more thoroughly illustrated than by the form which these bills have assumed. When a project is presented here the question is not, Will it help commerce? but, Does the locality want it? Does a Senator want it? Do a sufficient number of Representatives want it? While the proposition at first seemed to me startling—to leave these matters to a commission—I do not know but that I shall become a convert to that idea. It is impossible to resist a bill of this kind. It may be full of objectionale items; it may be said that a very large share of them will result in waste, and nothing but waste, but if there is sufficient support, if there are enough beneficiaries of this system, the bill goes through; and I think, Mr. President, it is high time that we should call a halt.

Two amendments, one of which was put on last year by the Senate and rejected by the House, and the other put on this year, are both in the right direction, because they look toward a more thorough and careful examination of and more discrimination in the selection of projects. I understand the main objection in the House to the amendment No. 77 was that it provides that the Secretary of War shall cause the Chief of Engineers to make an examination of all projects heretofore adopted, the further improvement of which is not desirable or the expenditure upon which is out of proportion to the benefit to be derived therefrom. There is no doubt that if a searching examination were made, many of these projects would be abandoned. We must face that question, and there is no one who has a project in which he is interested but who should be willing to have it reexamined to determine whether further expenditure is desirable.

Mr. POINDEXTER. Mr. President——

The PRESIDENT pro tempore. Does the Senator from Ohio yield to the Senator from Washington?

Mr. BURTON. I have finished. I only desired to say a few words.

Mr. POINDEXTER. Mr. President, the amendment No. 77, offered by the Senator from Nevada [Mr. Newlands], provides for a general and systematic survey of proposed waterway improvements and regulation throughout the country. Amendment No. 78 provides for coordination of the various departments of the Government connected with or concerned in waterway development and the cooperation of the Government with the various other parties, public and private, who are interested or concerned in the improvement and control of rivers.

The statement which has just been made by the Senator from Ohio [Mr. Burton] indicates very forcibly the merit of these proposed amendments to which the Senator from Ohio says he has heretofore been opposed, but which he is now inclined to favor. The appropriation of millions of dollars to build levees on the lower Mississippi, a great alluvial stream, for the purpose of preventing the destruction of hundreds of millions of dollars of farm property by floods, when those floods could be controlled, in all probability, with little net cost, by a coordination of the entire Mississippi River system, so far as its improvement is concerned, by storing the flood waters at the head of its tributaries, is like the old system of medicine, of treating the symptoms of the disease instead of eradicating its cause.

If a private concern were the trustee for a great work such as the United States is engaged in, of the improvement of the rivers over a great continental domain such as is ours, there is no modern business institution which would treat it as a series of innumerable units, composed of congressional districts or of municipalities, urging upon the Representative from each district the improvement of some particular project, but the whole would be systematized. The experience of modern private business indicates that upon such a system and comprehensive coordination the capitalization could be increased 100 per cent in the saving, in economy of administration, and in the increased results of the work.

Mr. President, I am in favor of the passage of the bill, and, consequently, I expect to vote for it, regardless of the adoption or rejection of these amendments; but I take this occasion to say that I approve the amendments and should like to see them adopted. I trust the Senator from Nevada will continue at every opportunity in the future, as he has with so much persistency in the past, to urge this great business reform in the conduct of the waterway interests of the Government.

Mr. CUMMINS. Mr. President, I do not intend to vote for the bill, but my opposition to it is based upon the error in what I believe to be the system itself. I do not believe that there ought to be any appropriation bill which combines appropriations for harbors and rivers. The problem of the development or maintenance of our harbors and the problem of improving the navigation or the commerce upon our rivers are different problems. I do not believe there ought to be money expended in the improvement of any river until a plan has been made and presented to Congress that will show that when the improvement is completed there can be and will be such cooperation—enforced cooperation, if you please—between the traffic upon the river and the traffic upon the land as will warrant the expenditure proposed.

The business to be done upon our inland rivers will never justify the appropriations we are making for their improvement unless the plan includes the transfer of freight from the river bank to the railway station. It is utterly impossible to create great traffic upon our rivers unless this commerce can extend into the interior; and I, for one, do not believe in pouring out our money for the improvement of a river, the deeping of its channel, until it is known that the commerce that floats upon the river can find its way to the interior points over the railways of the country. We have never reduced these improvements to that system.

I believe in the amendment proposed by the Senator from Nevada [Mr. Newlands]. The only objection I have to his amendment is that it does not go far enough. I think that there ought to be an intelligent consideration of the whole question; that river by river should be taken up, and that when we begin the improvement of a river we ought to know that the work will go constantly forward to its completion without waiting upon the temper of Congress from session to session.

I can not give my support to this bill for the reasons I have stated. I do not criticize the individual appropriations, because I do not know whether or not they are warranted by the practice heretofore prevailing. My complaint is against the practice itself.

Mr. CLAPP. Mr. President, I merely want to say a word of congratulation to the Senator from Nevada [Mr. Newlands]. It is true his amendment has not been kept in this bill, but I believe in the last few weeks he has made more progress with this work than he has in the two or three years preceding this session, and I believe he is to be congratulated.

Mr. JONES. Mr. President, I desire to say only a word. I am in favor of the substantial features of the amendment of the Senator from Nevada, but I do not feel justified in voting against the bill because they are not included in this conference report.

Mr. KENYON. Mr. President, I voted against the public buildings bill, and I shall vote against this bill, not only because it should embrace the amendments of the Senator from Nevada, and does not do so, but I think both bills are a bad example of the "pork-barrel" method of appropriation, and I am going to vote against such methods so long as I remain in the Senate.

Mr. BRANDEGEE. Mr. President, there was a matter of very deep interest to me put on this bill in the Senate. It is on the bill no longer; but I am not the kind of a man who wants to deprive other people of having the benefits of the bill. I shall vote for the bill. I hope the next river and harbor bill, or some other legislation outside of the river and harbor bill, will contain something analogous to the proposition proposed by the Senator from Nevada. I think that will be better for the country, as I stated when I voted for his amendment.

Mr. THOMAS. Mr. President, I merely want to say that I heartily concur in every word and every sentence just expressed by the junior Senator from Iowa [Mr. Kenyon].

The PRESIDENT pro tempore. The hour of 2.30 o'clock having arrived, the vote will be taken. The question is on agreeing to the conference report.

Mr. CUMMINS. I ask for the yeas and nays.

The yeas and nays were ordered.

Mr. NEWLANDS. Is it in order for me to move as a substitute that the report be disagreed to, and that these two amendments——

The PRESIDENT pro tempore. The only question before the Senate is Will the Senate agree to the conference report? It can not be amended under the rule of the Senate.

The Secretary proceeded to call the roll.

* * * * * * *

The result was announced—yeas 45, nays 16, as follows:

Yeas: Ashurst, Bankhead, Bourne, Brandegee, Briggs, Bryan, Burnham, Catron, Chamberlain, Chilton, Clapp, Clark of Wyoming, Clarke of Arkansas, Crawford, Dillingham, Fletcher, Foster, Gallinger, Gamble, Gronna, Johnson of Maine, Johnston of Alabama, Jones, Kavanaugh, Martine of New Jersey, Myers, Nelson, Oliver, Paynter, Penrose, Percy, Poindexter, Pomerene, Sheppard, Simmons, Smith of Georgia, Smith of Maryland, Smith of South Carolina, Smoot, Stone, Swanson, Thornton, Warren, Wetmore, and Williams—45.

Nays: Bristow, Burton, Cummins, Fall, Gore, Kenyon, Kern, La Follette, Lea, Newlands, O'Gorman, Owen, Page, Pittman, Shively, and Thomas—16.

Not voting: Bacon, Borah, Bradley, Brady, Brown, Crane, Culberson, Cullom, Curtis, Dixon, du Pont, Gardner, Guggenheim, Hitchcock, Jackson, Lippitt, Lodge, McCumber, McLean, Martin of Virginia, Overman, Perkins, Reed, Richardson, Root, Smith of Michigan, Stephenson, Sutherland, Tillman, Townsend, Watson, Webb, and Works—33.

So the conference report was agreed to.

RIVER REGULATION, FLOOD CONTROL, AND WATER CONSERVATION AND UTILIZATION.

THURSDAY, DECEMBER 21, 1916.

UNITED STATES SENATE,
COMMITTEE ON COMMERCE,
Washington, D. C.

The committee met at 10.30 o'clock a. m., pursuant to adjournment, Senator Duncan U. Fletcher presiding.

Present: Senators Fletcher (chairman), Jones, Vardaman, Shields, Kenyon, Sherman, Bankhead, Reed, Sheppard, and Chamberlain.

Present also: Hon. Benjamin G. Humphreys, of Mississippi; Hon. Newton D. Baker, Secretary of War; and Maj. Gen. Hugh L. Scott, United States Army, Chief of Staff.

The committee resumed the consideration of the bill (H. R. 14777), "An act to provide for the control of the floods of the Mississippi River and of the Sacramento River, Cal., and for other purposes."

The CHAIRMAN. The committee will come to order. I presume we had better begin with Gen. Scott this morning, hadn't we? We will hear the claims of the riparian owners later.

Senator VARDAMAN. I suggest, Mr. Chairman, if you please, that as Mr. Humphreys, of the House, is here, he ought to be heard in behalf of the bill, of which he is the author.

The CHAIRMAN. Perhaps we had better hear from Mr. Humphreys first, then.

But, before you proceed, I want inserted in the record at this point certain statements handed in by Senator Works in regard to the Sacramento project.

(The memoranda referred to is here printed in full, as follows:)

MEMORANDA.

Decision of Judge Sawyer, January 7, 1884.

Débris act passed, March 1, 1893.

Débris commission report, June 30, 1907.

Made full report of plan August 10, 1910.

Congress adopted report and appropriated $400,000, a like amount to be appropriated by California to carry on work, 1910.

Final report of débris commission on which this bill is founded, June 17, 1913.

California reclamation act creating reclamation board, August 8, 1915.

State has expended $1,970,000.

The estimate for the work in which the commission recommends that the United States should participate on a 50 per cent basis is as follows:

(a) Enlargement of river channel below mouth of Cache Slough	$9, 075, 420
(b) Weirs	1, 617, 560
(c) Rectification and enlargement of river channels	191, 375
	10, 884, 355
Add 15 per cent for contingencies and administration	1, 632, 653
	12, 517, 008

Less amount appropriated by the United States and the State of California under existing project	$800,000
	11,717,008
Share each of United States and State of California	5,858,504

Estimates of total costs in report of 1910.

Levees:		
58,000,000 cubic yards, at 6 cents	$3,480,000	
28,000,000 cubic yards, at 12 cents	3,360,000	
18,000,000 cubic yards, at 20 cents	3,600,000	
		$10,440,000
Excavation:		
148,600,000 cubic yards, at 6½ cents	9,659,000	
8,250,000 cubic yards, at 12½ cents	1,031,250	
380,000 cubic yards, at 25 cents	95,000	
		10,785,250
Land:		
4,400 acres, at $200	880,000	
8,400 acres, at $75	630,000	
78,000 acres, at $25	1,950,000	
		3,460,000
Spillways:		
8,000 feet, at $125	1,000,000	
4,500 feet, at $100	450,000	
1,140 feet, at $80	91,200	
		1,541,200
Bridges		1,382,000
Miscellaneous		1,740,000
Engineering and contingencies, 15 per cent		4,451,550
Total		33,800,000
Less amount appropriated under existing project		800,000
Total		33,000,000
To be paid by the Government		5,858,504
To be paid by the State		27,941,496

The CHAIRMAN. You may now proceed, Mr. Humphreys.

STATEMENT OF HON. BENJAMIN G. HUMPHREYS, A REPRESENTATIVE FROM THE STATE OF MISSISSIPPI.

Mr. HUMPREYS. I do not know to just what phase of this question I should address myself. If I am right in my assumption that it is the general provision set out in section 3, I will discuss that.

I think it is sufficient perhaps to say that the plan proposed for the control of the floods on the Mississippi River, as contained in section 1 of the bill, is the plan which has been worked out by the Mississippi River Commission, and that it is an erroneous idea, as expressed by Senator Newlands yesterday, that this bill makes no provision for revetment. The plan of the Mississippi River Commission contemplates revetting the banks. They do not, however, think that it is necessary to revet both sides of the river bank from the Gulf to Cairo. A few years ago Mr. Burton, when chairman of the Committee on Rivers and Harbors, addressed a resolution to the Mississippi River Commission asking what a complete revetment of the river would cost, and the commission replied, in the report which is here among your papers, about $160,000,000; but they also said that there was no occasion for it, that it would never be necessary. It was estimated that the ultimate cost of revetment should be something like $70,000,000 or $75,000,000, in the course of human events, but that they could not spend more than $2,000,000 to $4,000,000 a year.

Senator SHEPPARD. That means from Cairo down, when you talk about "complete revetment," does it not, Mr. Humphreys?

Mr. HUMPHREYS. Yes; all the way down from Cairo.

Senator KENYON. Mr. West, a member of the commission, estimated the cost of complete revetment would be about $158,000,000, and that the additional levees which would be made to protect the system would cost about $70,000,000. That would be $228,000,000.

Mr. HUMPHREYS. I remember that statement quite well. But that was only Mr. West's opinion. The commission said there was no occasion for complete revetment. It was estimated by Col. Townsend and the commission that it would possibly take $70,000,000 to $75,000,000, but that this would run through 25 or 30 years, for the reason that the banks do not all cave at the same time or at the same place. You will find a cave here one year, there the next year, and so on. So that with $2,000,000 to $4,000,000 they could take care of every caving bank on the river.

Senator KENYON. With $2,000,000 to $4,000,000 a year?

Mr. HUMPHREYS. Yes. In the course of time they will have all the banks permanently protected.

Senator VARDAMAN. The erosion does not take place except in the bends of the river.

Mr. HUMPHREYS. In the concave bends of the river is where they cave. This bill takes care of the revetment for five years and completes the levees.

Senator KENYON. Does it bother you, Mr. Humphreys, to answer questions?

Mr. HUMPHREYS. Not at all.

Senator KENYON. Then I want to ask this: Your bill provides for carrying on this work according to plans of the Mississippi River Commission "heretofore or hereafter adopted." Are those plans already in existence or does it contemplate that there shall be plans made in the future? Are the plans such plans as have been heretofore adopted or shall be hereafter adopted? I would like to know that; what I would like to know is this: Is this work to be carried on according to plans of that commission that have already been adopted and are in existence, and do they propose to carry on the work according to a well-defined plan, or are we to appropriate money for this work to be carried on according to future plans?

Mr. HUMPHREYS. It is like this: After many years of observation and experience the commission has at last been able to ascertain accurately and definitely that it would take 155,000,000 cubic yards of dirt to make the levees strong enough to withstand the highest water that will ever in all probability come down the river. They have definitely determined upon the construction of these levees here [indicating]. There are two gaps in the levees—one just above Vicksburg and one just above Helena. They would be completed. So that the plan is specific and definite.

Senator KENYON. Where could we get hold of that plan? I have not been able to get hold of it.

Mr. HUMPHREYS. The plan was originally adopted in 1882—I think it was. Every engineer who has ever investigated the Mississippi River on behalf of the Government—and no river in all the history of the world has been subjected to the same relentless scrutiny and study, and none is known so well, as the Mississippi River—is of the same opinion. There is no difference of opinion among engineers. Not a bit. They all agree that the way to control the floods is to build levees and revet the banks.

There is nothing new in these questions of reservoirs, outlets, bypasses, etc. In a report by Humphreys & Abbott, made after the most elaborate and careful study—in fact, after the most elaborate study of any single river that has ever been made in the history of the world—they took up every one of those propositions—the outlets and the cut-offs and the reservoirs and all. They go into every one in great detail. They show where the various methods have been used in all river projects in the world.

Senator KENYON. What report is that?

Mr. HUMPHREYS. The report was made—it is what is commonly known as the Humphreys & Abbott report. It was presented in 1860, just prior to the Civil War.

Senator JONES. Where can you get that?

Mr. HUMPHREYS. I do not know whether you have one in the committee library or not.

Gen. SCOTT. I have a copy of it.

Senator SHEPPARD. You spoke of reservoirs; does that include the modern idea of reservoirs?

Mr. HUMPHREYS. The idea of the reservoir is not a modern one. One of the greatest works of antiquity was the construction of Lake Moeris, upon the upper reaches of the Nile. It was a large, artificial, inland lake; one of the great naval battles of antiquity was fought upon it. That lake was constructed there for a reservoir to control the floods of the Nile.

Senator SHERMAN. That was part of a canal system made for two purposes.

Mr. HUMPHREYS. For two purposes—yes—as all the works in Egypt are for two purposes—irrigation and flood control.

Senator SHERMAN. And for defense.

Mr. HUMPHREYS. For defense? Well, in the course of human events it developed that it was a source of military weakness. The King of Thebes captured Lake Moeris and destroyed its intakes and outlets. Some of our Bible scholars say that this is where Joseph got his foreknowledge as to the lean years that were to come and gave the good advice to Pharaoh to lay up corn against those unfortunate times to come.

That statement is merely to show that there is nothing new in this proposition. No engineer of the Government who has ever been sent to study the Mississippi River floods, whether from civil or military life, has ever reached any other conclusion than that the sole method of handling the problem is by building levees and by protecting these levees from caving into the river by revetments.

Senator KENYON. Has the Mississippi River Commission a plan, and is this money to be appropriated to carry out that plan?

Mr. HUMPHREYS. Absolutely. It will be found fully set out in the annual report of the commission.

Senator VARDAMAN. How much is to be used for these revetments?

Mr. HUMPHREYS. It is contemplated that $15,000,000 of the amount authorized by this bill will be used for revetments.

Senator VARDAMAN. That will be $3,000,000 a year?

Mr. HUMPHREYS. Yes. The terms of the bill do not require this. We just left it to them. It will be an average of $3,000,000 a year. They estimated for $2,000,000 to $4,000,000 annually. The amount authorized will be the average of the two amounts.

Senator KENYON. How much do the local interests put into this work?

Mr. HUMPHREYS. They are to put in not less than $15,000,000.

Senator KENYON. What proportion of the bill—what proportion is that of what the bill puts in?

Mr. HUMPHREYS. One dollar by the local interests to two by the Government.

Senator KENYON. They put up half as much as the Government?

Mr. HUMPHREYS. Half as much as the Government.

Senator KENYON. In the Sacramento project they put up the same amount.

Mr. HUMPHREYS. They put up an equal amount in the Sacramento project, yes.

Senator KENYON. Why the discrimination—why the distinction?

Mr. HUMPHREYS. That is a very long story. To begin with, since 1882, since we undertook——

Senator VARDAMAN. I have been requested to run down to the Post Office Committee to cast my vote in a matter and will be back here shortly.

The CHAIRMAN. Very well.

Mr. HUMPHREYS. Only in exceptional cases, in the improvement of the rivers and harbors of the country, has Congress required any contribution on the part of local interests which were assumed to be particularly benefited, and the amount of that contribution when required has been determined by the exigencies of the particular case—sometimes one-fourth, sometimes one-third, sometimes one-half. No fixed rule of apportionment of cost has even been laid down, and, naturally, no such rule could equitably be adopted. In the two particular cases provided for in this bill the engineers of the Army, after their investigation, made their recommendations to Congress. Col. Townsend, for the Mississippi River Commission, believed that in the Mississippi River project the contribution of local interests should be $1 to $3 by the Government. In the Sacramento project the engineers thought the contribution by California should be 50 per cent. The bill, as you will observe, provides that local interests on the Mississippi shall contribute not less than $1 for every $2 by the Government.

Now, in some of the districts, if we are to proceed with this project expeditiously and complete it within a reasonable time, the contribution must be as low as one dollar to two, because the possible revenue from such districts is so small that it would seriously delay the work if we should measure our progress by a half-and-half basis. In other districts the contribution by local interests undoubtedly will be dollar for dollar. Up to 1891 all appropriations by Congress for levee construction were limited by the terms of the bill so that none of it could be expended except in the interests of navigation. The language of the law was as follows:

> That no portion of the sum hereby appropriated shall be used in the repair or construction of levees for the purpose of preventing injury to lands by overflow, or for any other purpose whatever, except as a means of deepening or improving the channel of such river.

In 1892 this proviso was dropped. Now, since that time levee construction has proceeded with perhaps the main purpose of protecting the country from overflow, although, as a matter of fact, the engineers still adhered, and still do adhere, to the proposition that the river can not properly be improved for the purposes of navigation without levees. Since the Government then began to appropriate money more or less directly for flood control, the United States has expended for levees about $30,000,000, and during that same period local interests have contributed about three times that amount. Even should the commission contribute $2 everywhere to $1 by local interests, it will be seen that the Government's contribution will still be less than the 50 per cent provided for in the Sacramento project.

In the Mississippi River project it is the testimony of the Army engineers that local interests have already contributed more than enough money to have built the levees high enough and strong enough to have withstood any flood that ever would have come down the river had the watershed above Cairo remained in a state of nature. In other words, the great States to the north of us have by their very proper and legitimate activities piled up more water on the lower deltas than the people there have been able to cope with. This no doubt was another element in the consideration of the House when the proportion was fixed as it appears in the bill now. The extent of the area which will be made habitable and rendered susceptible to reclamation by the control of the floods in the Mississippi River—some sixteen million acres—is so large and its possible economic value to the whole country so great that no man can doubt that its ultimate reclamation, which this bill would make possible, would materially affect the general welfare of the whole country.

There are other Federal interests involved in the Mississippi which do not appear, or at any rate do not appear in equal degree, elsewhere—for instance, the interruption of interstate commerce. Several thousand miles of railroads which are engaged in carrying commerce from remote sections of the country into and across the Mississippi deltas to other sections of the country are sometimes interrupted, in fact annulled, for two or three months at a time. The mails can not be carried expeditiously between the States which lie on either side of the deltas. All these facts no doubt were taken into consideration in fixing the amount of contribution. Then, too, it is demonstrated by the testimony of the engineers, which is set forth very fully in the hearings as well as in the reports, that there will be a very material saving in the ultimate cost of the levees if the work can be carried on continuously and finished within a reasonable time, say five years. After very exhaustive investigation the House committee reached the conclusion, and the Mississippi River Commission agreed to it, that the levee districts on the lower Mississippi could not contribute more than $3,000,000 a year toward levee construction. If the contribution on the part of the Government were limited to an equal amount—in other words, if only $6,000,000 is to be expended in levee construction, $3,000,000 by local interests and $3,000,000 by the Federal Government, it will require some eight years to complete the levees, and we know from very unhappy experiences in the past that we dare not hope for a period of eight years without disastrous floods. Should these floods come before the levees are completed many will be destroyed and the ultimate cost thereby increased. Heretofore Congress has never required any local contribution, but the House believed that if the Federal Government should now undertake this work on the more definite plan proposed in this bill, that some of the levee districts which have heretofore contributed largely from necessity, might not be induced to continue that contribution hereafter, and so we thought it advisable to compel them to continue their part of the work by inserting this provision in the bill.

I think I could say a good deal more on this, but I am really anxious to discuss the general provisions of the bill contained in section 3.

Senator KENYON. What are these local interests?

Mr. HUMPHREYS. Levee boards, created by the legislatures. They have authority to levy taxes for the specific purpose of flood protection. That does not include, of course, the money spent in drainage and the reclamation projects.

Senator SHIELDS. These levee boards have the power to levy taxes and to issue bonds to defray the expenses?

Mr. HUMPHREYS. Yes.

Senator KENYON. Are these taxes levied on the reclaimed land?

Mr. HUMPHREYS. On all the lands protected.

Senator KENYON. There will be reclamation of a great many millions of acres of land, will there not?

Mr. HUMPHREYS. It depends entirely upon what you mean by "reclamation." It is not reclamation in the sense it is used out West. It will make reclamation possible. After the levees are completed, the floods will be kept off that great area——

Senator KENYON. That will vastly increase the value of those lands, will it not?

Mr. HUMPHREYS. I hope so.

Senator KENYON. What burden of this expense is that land going to carry that is so increased in value?

Mr. HUMPHREYS. It is going to carry, under the terms of this bill, not less than $15,000,000 plus the cost of rights of way and plus cost of maintenance.

Senator KENYON. How many acres do you estimate, of that land, will be increased in value?

Mr. HUMPHREYS. There are in the entire delta—much of it is already protected, however—some 16,000,000 acres of land, which will be protected from floods of the Mississippi River by completing the levees. Much of it is already protected.

Senator KENYON. I think Mr. West estimated twenty millions.

Mr. HUMPHREYS. It is 20,000,000 acres undoubtedly; but 20,000,000 acres will not be protected from overflow by this levee system, because there are several streams that empty into the Mississippi River, and it is utterly impossible to protect the lands right near the mouths of the streams; so it is thought that there are about 4,000,000 acres of land that will not be benefited by this work.

Senator KENYON. What in your judgment would be the average increase in the value of these 16,000,000 acres of land by this improvement?

Mr. HUMPHREYS. It would be very difficult to ascertain that, Senator. The testimony before us is that this land is worth anywhere from $5 to $15 an acre, perhaps, as it is—cut-over timber lands. The average will be less than $10 probably. The further testimony is that it will cost, including that cost, at least $50 to put this land under cultivation—to cut the trees off the land, build houses, and build fences, and otherwise improve the land, and to put it in a fair state of cultivation. That is more than you can sell it for now.

Senator KENYON. Figuring that way, of course. But, taking the land as it is and taking it as it will be when these improvements are completed, what will be the difference in the fair market value of these lands?

Mr. HUMPHREYS. I do not know any way in the world of answering that question. We have asked a great many witnesses who have come before us, in an effort to find out, but nobody has ever been able to give exact figures on the subject. We hope, of course, that it is going to be very material, that it will very materially enhance the value of the property down there, because it makes it possible for the people to go in there and develop it. The value is created, not by the mere construction of the levees, any more than values are given to the lands in the Northwest by simply conquering the Indians; but when you run them off, and make it possible for the pioneer to go in there, you have added to the value of the land. Still the settler must clear the land, dig ditches, build houses, and put the farm under cultivation, build schools for the neighborhood; then people come in and develop the country, and that gives value to the land.

Senator SHEPPARD. What is land in Mississippi like this worth that will not overflow?

Mr. HUMPHREYS. The land in the upper parts of the Yazoo Delta is worth anywhere from $50 to $100 an acre, under cultivation.

Senator JONES. What is uncultivated land worth?

Mr. HUMPHREYS. It is worth anywhere from $5 to $15 an acre.

Senator KENYON. Is uncultivated land that is not subject to overflow worth just the same as the other?

Mr. HUMPHREYS. No. The land not subject to overflow ought to be a more attractive proposition to investors.

Senator KENYON. I should think so.

Mr. HUMPHREYS. There is no land there that is absolutely unprotected—very little. You will notice on the map there [indicating] the Yazoo Delta. It is on the right. That is on the east bank of the river. You can see it there on the map. This line [indicating on map] represents the hills from Memphis to Vicksburg and that crooked line there represents the river. From up in Tennessee down to—I can not see very well, but I imagine it is about here [indicating on map]—the levee is completed, about 130 or 140 miles. Now, behind that levee nobody thinks of overflow. There is no danger there, no more danger there than there is in the hills. There is no danger, because the levees have been there for a number of years.

It is built up to proper grade and section and there is no danger from overflow. And, due to that fact, a great many people have gone into that country, and many are still going in there. In addition to that they have constructed drainage ditches up there [indicating on map] and have drained large areas of this section up here [indicating].

Senator KENYON. What is that land worth per acre?

Mr. HUMPHREYS. That is the most valuable land I know of in the delta, and it is worth, for cultivated land, from $50 up to $100 an acre, due to the character of the land, its location, touching the railroad or the river, and the character of the improvements, which are all elements that usually enter into that consideration.

Senator SHIELDS. You are now speaking of Tennessee lands that have been permanently improved?

Mr. HUMPHREYS. No; in the Mississippi Delta in Mississippi.

Senator SHIELDS. Yes. That is what happened to lands in Tennessee when the levee at Fulton and below was built.

Mr. HUMPHREYS. Yes.

Senator SHIELDS. You have about described what they were worth before and what since, and what it will cost. Won't you have to add the immense cost of drainage?

Mr. HUMPHREYS. Yes.

Senator SHIELDS. That is spread over the levee districts. We have incorporated sections of the country called drainage districts.

Mr. HUMPHREYS. Yes.

Senator SHIELDS. And the taxes from these drainage districts are paid in and used for these purposes. There is a sinking fund also.

Mr. HUMPHREYS. We have the same thing in Mississippi. My county, for instance, has a drainage tax of $7 an acre, the average for the whole county.

Senator BANKHEAD. That is $7 an acre?

Mr. HUMPHREYS. Yes. Our levee tax is 17½ mills for the levee, $1 a bale on cotton, and 5 cents an acre on the land.

Senator SHEPPARD. That is, on the land benefited?

Mr. HUMPHRIES. On all property, real and personal.

The CHAIRMAN. Is that tax of $7 an acre for every year?

Mr. HUMPHREYS. No. That is the total debt. The total debt is an average of $7 an acre for drainage purposes on all the land in the county. On the land actually embraced in the drainage district it is much higher.

Senator VARDAMAN. There have been drainage districts organized there and bonds issued.

The CHAIRMAN. I see.

Senator KENYON. That runs through several years?

Senator VARDAMAN. Yes.

Mr. HUMPHRIES. Any other questions about the Mississippi River? Otherwise I will assume that you gentlemen have concluded—without exception, all committees have reached the same conclusion—that the only way to control the Mississippi River floods is to complete the levees and revet the banks.

Senator JONES. What about the raising of the bottom of the river?

Mr. HUMPHREYS. That is pure fiction. That is one of those peculiar fictions that have been started and which men seem unable to get away from. I have never yet seen a man who believed in it who could be shaken in his faith. That is the way with most fictions. There is no river in any alluvial valley on the face of the earth that could be cited to justify that theory. Take a river like the Sacramento and others that come down out of the mountains. When they strike the level country (they, of course, can carry more silt down the mountains than on the level slopes the rivers have filled whether they have levees or not. The same story was told of the River Po, and the same story has been told of many other rivers in the world. The same story has been told of the Yellow River in China. Of course, you can get by with almost any kind of story that you want to tell about China. It is so far away nobody can refute it.

Senator KENYON. We are not interested in those rivers. What we are interested is the Mississippi.

Mr. HUMEHREYS. Of course; but the records have been kept of the River Po for 200 years——

Senator KENYON. You say it has not raised the bottom of the Mississippi River?

Mr. HUMPHREYS. No; I will leave out those other instances and talk about the Mississippi.

Senator JONES. I suggest that would be in the interest of time.

Mr. HUMPHREYS. Very well. We started in 1882 and established permanent bench marks on the river, to which subsequent measurements could be referred. We went across the river [indicating], three sections to the mile, 75 feet apart. We have been measuring it from 1882 down to the present time. Along the front of my district, for 200 miles, we have taken 40,000 soundings, with the ultimate conclusion reached by the commission that the tendency has been to depress the bottom of the river rather than to raise it. It is a pure fiction that the river bed is raising. There are about as many fictions about the Mississippi River as there were about the gods of Greece.

Senator KENYON. There is a great deal of sentiment down there about this fiction.

Mr. HUMPHREYS. There is a great difference of opinion, yes; but not among people who are informed on the subject. Occasionally you will find where a sand bar has appeared in front of a man's plantation. He could remember when that was 50 to 75 feet deep, and now it is only 10 or 15 feet deep. He is perfectly willing then to believe that the bottom of the Mississippi River is filling up along its whole length.

Senator KENYON. It is said that the bottom of the Mississippi River at New Orleans is above the level of the town.

Mr. HUMPHREYS. No doubt you have seen that statement; it is on a par with many others; yet the Mississippi River at that point is 200 feet deep—200 feet or more below the level of the city.

Senator SHEPHERD. I think the statement was that the crest of the river was above the level of the town.

Senator JONES. No; it was the bottom of the river.

Mr. HUMPHREYS. The bottom of the river; yes. That is the story. But, gentlemen, whenever the matter has been investigated it has been demonstrated that it was utterly inaccurate. So of the Yellow River in China.

Senator JONES. It ought to be a very easy matter to demonstrate that. Were the gentlemen asked about that in the hearings?

Mr. HUMPHREYS. Yes; very many times.

Senator JONES. They have gone into that question?

Mr. HUMPHREYS. Yes; thoroughly and completely, and the last time they did so at the request of the President, in 1913, and made a very interesting report on it.

Senator SHIELDS. Is there any evidence in the tributaries that the bed of the Mississippi River is raising? It would dam up the mouths of the tributaries. Is there any evidence of that kind?

Mr. HUMPHREYS. There is no evidence in the world that there is any tendency for the bed of the Mississippi River to silt up. If that were true, there would be no river there. It has been running down there for a million years, probably. We get the silt from the Missouri River. It sometimes runs over the tops of the banks of the Mississippi, and sometimes barely fills the river up. It must rise 40 feet before it goes over the banks. If the bed of the river were raising, if it had been raising, it would have been filled up long ago. That river would have been filled up long before any of us were born if it were going to fill up at all. There would have been no river there now.

We have simply accepted the universal opinion of the engineers, whether they be civil or military engineers, who have been set to work by the Government to work out this problem. So we adopt revetment and levee protection as the only means of doing it.

Now as to the plans "hereafter to be adopted." At the city of New Orleans it is vigorously insisted by some that across the river from New Orleans there should be a spillway, and that the crest of the levee should be cut down some feet—4 or 6 feet, or something like that—to provide for a spillway and so to prevent the overflow of certain properties in New Orleans. It was insisted that we put in the words "or hereafter" so the commission could, if it concluded to adopt that or any other plan, act without further authority.

Senator KENYON. Is that the only purpose of the word "hereafter"?

Mr. HUMPHREYS. It is the only purpose; yes.

Senator KENYON. That would be a good purpose, I think.

Mr. HUMPHREYS. I do not think it will be adopted.

Senator KENYON. It might be necessary to save the city of New Orleans, sometime or other.

Mr. HUMPHREYS. It might, but I do not think so. There is some difference of opinion among engineers as to that, however.

Senator JONES. That would overflow a lot of other lands.

Mr. HUMPHREYS. Yes. It might create a silt deposit over there and fill up in a few years.

Senator JONES. Yes.

Mr. HUMPHREYS. But the state board of engineers of the State of Louisiana have pronounced against it very vigorously; and they went before these people when they were building those terminals there at New Orleans, constructing these tremendous warehouses, etc., and told them, "You are putting your warehouses at least 3 feet too low, for when these levees are completed, the level of the river is going to come up 3 or 4 feet higher, and you ought to put your terminal docks here higher." They did not do it. Now, when that thing happens that they were told would happen, they want us to cut off the top of the levee and let the river run over on the other side. I do not think that will ever be done, but if it is, this commission could handle it.

The CHAIRMAN. Have you seen the proposed substitute of Senator Newlands?

Mr. HUMPHREYS. Yes, sir.

The CHAIRMAN. What have you to say with regard to that?

Mr. HUMPHREYS. I have this to say, to start with, Mr. Chairman: The Committee on Flood Control of the House has jurisdiction only of matters relating to flood control. It was carved out of the Rivers and Harbors Committee, whose jurisdiction extended to navigable streams, terminal facilities, railroad connections, etc. If this bill is stricken out and the Newlands bill substituted, or if you put it on as an amendment or as a part of it, and the Senate should agree to it and it should go into conference, you would have to meet as conferees on the part of the House a committee that would have no jurisdiction of the subject matter although there is another committee in the House that has full jurisdiction of all these subjects and could take this matter up properly and confer upon it. The same amendment would properly go to the Rivers and Harbors Committee if the amendment were put upon the rivers and harbors bill.

Senator JONES. It often happens that they go to an entirely independent committee.

Mr. HUMPHREYS. Yes; but it is very bad practice.

Senator JONES. Is that very common?

Mr. HUMPHREYS. I do not know how common it is, but it happens. Here you have two bills coming to this committee from the House. Upon one of these bills, the Newlands bill is proper as an amendment, but upon the other it is entirely improper. You can say whether you will attach it to the right or to the wrong bill.

Senator KENYON. Have you a rivers and harbors bill?

Mr. HUMPHREYS. Oh, yes; there will be a rivers and harbors bill; but whether it will carry appropriations for any specific projects I do not know. There surely will be a rivers and harbors bill. We will have that, even though it may carry nothing more than maintenance of the existing projects. If you take the rivers and harbors bills that have heretofore been defeated, you will see that where they carried only maintenance, the legislative features of the bill went through; so this amndment could go through on a bill that cared only for maintenance. On that score I think there is no objection to putting it on to that bill.

Senator KENYON. Is that your only objection to the Newlands bill?

Mr. HUMPHREYS. No; it is not.

The CHAIRMAN. What is your objection?

Mr. HUMPHREYS. I am opposed to it on its merits.

Senator JONES. Does the committee understand that the Senator has offered a substitute? That is what you are talking about, is it?

Mr. HUMPHREYS. Yes. He eliminates section 3 from the House bill and puts on a proposition which, if I understand it, means to provide for a commission composed of four Cabinet officers.

Senator JONES. And three other parties appointed by the President.

Mr. HUMPHRIES. And some other parties. That commission would make a study of various subjects and coordinate all the various scientific activities of the different departments of the Government, with a view to the regulation of navigation, water power, flood control, and many other things. I understand that is what it means, when it is boiled down.

Senator **Kenyon**. Isn't that a good thing?

Mr. **Humphreys**. Possibly so. Personally, I believe in a commission to do things in one department of the Government and not in four. I believe it ought to be under the Secretary of War.

The purpose of section 3 of the House bill and the purpose of the Newlands substitute for that section, as well as I can understand its purpose, is to provide for future examinations of flood problems throughout the country. The substitute, of course, undertakes to do a good deal more. As I understand Senator Newlands's ideas on the general subject, there are several fundamental differences between us. I believe that examinations for the various flood problems throughout the country should be made by the Secretary of War, or, rather, under him by the engineers of the Army in collaboration with representatives from the other departments who have by virtue of their particular employment especial knowledge and peculiar fitness for the work, rather than under a commission composed of four Cabinet officers of equal rank, importance, and authority. In other words, I believe there ought to be one department head charged with the responsibility of the work rather than a divided authority. Then, I think the flood problems which are to be examined ought to be indicated by Congress. To illustrate my idea, take the watershed of the Ohio River. A survey of that watershed such as would be made under the Newlands plan would cost somewhere between five and ten million dollars—probably nearer ten million than five—and it would require a number of years to complete it. Of course, the map would be a very valuable one, and the data secured no doubt would be useful.

Instead, however, of proceeding in that way, I believe that every flood problem in the Ohio Valley can be designated by Congress and a survey made which will answer every practical purpose for less than 10 per cent of the cost of the general survey. A few years ago, in fact, the President created what is known as the Ohio River Flood Board, composed of engineers of the Army. That board during the past year has been making a preliminary investigation of flood conditions in 10 tributaries which were designated by Congress. The resolution calling for this investigation, as a matter of fact, was put on the rivers and harbors bill as a Senate amendment. A preliminary investigation has been made of all these projects and a great deal of interesting data obtained. The report has not been published yet, but I have examined it somewhat, and it will be possible now to make a detailed survey of every one of those projects at a cost of less than one-half million dollars. This estimate is based on a great deal of data accurately figured out and will be in the report which will be published in a few days. The report will most likely me—I think undoubtedly will be—technically unfavorable, because under the law as we proceed now the engineers are limited in their recommendations by the general law that the interest of navigation involved in the proposed work must be sufficient to justify the appropriation. Section 3 of the House bill proposes to broaden the scope of these investigations beyond the mere matter of navigation, and the engineers are called upon, as you will see from the bill, to report upon four distinct matters. First—you will find this at line 19, page 7 of the House bill—the extent and character of the area to be affected by the proposed improvement; second, the probable effect upon any navigable water or waterway; third, the possible economical development and utilization of water power; and fourth, such other uses as may be properly related to or coordinated with the project.

I think there are Federal interests involved in these Ohio River flood problems which are sufficient to justify beyond any question an appropriation of the four hundred and odd thousand dollars which the engineers say will be required, but the interest of navigation alone would not justify it. Under the terms of section 3 these reports come to Congress, and Congress then will pass upon the subject matter and determine whether or not, in the opinion of Congress, it would be worth while to spend the money. If I understand Senator Newlands's proposition, he would have a commission authorized to make this investigation and spend the money without going back to Congress for any further authority. You will notice also in the sentence beginning on page 7, at line 24, of the House bill that—

> the heads of the several departments of the Government may, in their discretion, upon the request of the Secretary of War, detail representatives from their respective departments to assist the engineers of the Army in the study and examination of such watersheds, to the end that duplication of work may be avoided and the various services of the Government economically coordinated therein.

Now, I believe that is a wise provision and that it is broad enough in its scope to comprehend all of the activities which ought to be included, but it puts them all under one responsible head, the Secretary of War. Several years ago this whole matter was referred to a Cabinet committee, usually referred to as the interdepartmental committee, composed of the Secretary of War, Secretary of the Interior, Secretary of Agriculture, and Secretary of Commerce. They undertook, through the chiefs of some of their bureaus who dealt with the various subjects contemplated, to apply the Newlands bill to the Mississippi River, and after some months of study and investigation that subcommittee reported that it would require $15,000,000 to make the surveys necessary to an intelligent report.

Nothing further came of that until the flood of 1916 came, then these Cabinet officers got together again to make a report. In the meantime, Mr. Garrison had retired—the Secretary of War; so the three others met and they made a report with suggestions as to what ought to be done. That is embodied in the hearings.

Now, we know what Mr. Garrison, Secretary of War, thought on that subject, although he was not of the body that made this report, at that time. He had made a report which I put in the Record in the debate on this bill. He took the position that the economical thing to do was to leave these matters in the Department of War, where he had his machinery already organized, and that it could there be handled more economically, be more economically administered. I personally concur in that opinion. I think it would be unfortunate to have four Cabinet officers at the head of any commission, because I believe that means a headless commission. In answer to that it is suggested that the President would be the head of it. In my opinion, that does not mean anything. I believe it ought to be left with the Secretary of War. Mr. Garrison sets out his reason here——

The **Chairman**. Give a reference to the page, Mr. Humphreys.

Mr. **Humphreys**. It was May 17—page 9286, of the Record, I think it is. I have it here in another form, and I will just leave that with the committee.

Senator **Vardaman**. Embody that in your remarks or leave it with the secretary of the committee.

The **Chairman**. Put it in the record.

Mr. **Humphreys**. Perhaps you would not want that whole report put in. I will just indicate what is to go in. This is taken from the report on the Ohio floods and is in House document 914, dated April 15, 1914 [reading]:

> The subject of flood protection and flood prevention is one of great national import, and it is imperative that steps be taken to ameliorate conditions in the most afflicted districts in the various parts of the United States without unnecessary delay.
>
> The interests of navigation and of interstate commerce demand that the Federal Government seek a remedy and join with the local interests in applying it. Economical and efficient cooperation on the part of local interests is extremely difficult to attain unless the Federal Government lends its unifying and guiding power. By extension of the authority conveyed by sections 9 and 10, act of 1899, recommended above, the War Department would be empowered to pass upon plans evolved by various of the communities, with a view to insuring that they do not conflict with a general plan of flood protection for the entire district to the detriment of navigation and other inerests; but it is my belief that the Federal Government should go further, and that to accomplish the best results it should undertake to prepare general plans of flood prevention and protection, to pass upon and coordinate plans prepared by the various communities, to arrange for a fair and proper distribution of the cost of execution of such plans, and the portion of the work to be accomplished by each of the interested parties. The portion of the expense of the undertaking which should be borne by the Federal Government should be the value of the protection rendered to navigation, to interstate commerce, and other Federal interests.
>
> If this work be placed under the War Department on the same basis as the river and harbor work, with which it is intimately connected, it can be accomplished with no large initial expense. No new and expensive organization need be created. Each case requiring appropriation will be presented in an intelligent, concise, and concrete manner for the consideration by Congress, and with Congress will rest the decision as to which rivers shall be considered nad the rate at which they shall be appropriated for.

I wish to call attention particularly to the last paragraph in this report and also to section 3 of the bill, to show how closely the committee followed Mr. Garrison's suggestion when this House bill was drawn. The report of the other three Cabinet officers covered several typewritten pages, but concludes with this summary:

> To summarize, we recommend:
>
> First, that Congress declare its purpose to deal with our river problems in a comprehensive way, involving a large ultimate expenditure of funds and the immediate expenditure of considerable amounts and the creation of machinery intimately related to the executive branch of the Government.
>
> Second, that the boards and the other parts of the machinery provided for shall be directed to continue the work on the lower Mississippi substantially under existing plans to proceed with the investigations and the elaboration of plans on other parts of the Mississippi River and other rivers of the Nation.
>
> Third, that all the available agencies of the Government shall be coordinated in this endeavor to improve and protect our rivers, to control floods, to utilize waters, to reclaim valuable lands, and to make the necessary reports to Congress as basis for additional appropriations.

Fourth, that the expenditures for this work should in the main be met by the sale of national bonds, and that the lands benefited should be made to bear a proportion of such expenses, agreements in this regard to be submitted to the Congress as part of the plan for development.

Senator KENYON. Was there an extended debate in the House on this bill?

Mr. HUMPHREYS. Three days.

Senator KENYON. Running along about May?

Mr. HUMPHREYS. It was concluded about the 17th of May.

Senator JONES. Was there a debate on this bill, or was the debate partly on something else?

Mr. HUMPHREYS. It was on this bill. It is my recollection that there were 21 votes for the Newlands substitute and 180 against it.

Now, Mr. Chairman, if I may quote or sum up this——

The CHAIRMAN. You are referring to what Secretary Garrison said?

Mr. HUMPHREYS. No; the other three—I do not recollect that Secretary Baker joined them, for he had just come into the Cabinet, I think, and was not sufficiently familiar with the subject to feel justified in joining in that report——

Secretary BAKER. It was made before I came at all.

Mr. HUMPHREYS. Yes. Thank you.

While we adhered closely to the recommendations of Secretary Garrison, I will call your attention to the further fact that we also followed very closely the recommendations of the other three Cabinet officers as set out in their summary, which I have just read.

For instance, their first recommendation that—

> Congress declare its purpose to deal with our river problems in a comprehensive way, involving a large ultimate expenditure of funds and the immediate expenditure of considerable amounts and the creation of machinery intimately related to the executive branch of the Government.

In section 3 of the bill we do create machinery intimately related to the executive branch of the Government and make all existing laws, so far as they are applicable, touching improvements of rivers and harbors apply to projects relating to flood control. That is to say, that the Secretary of War may employ civilians as assistant engineers when it is desirable to do that; that funds should be disbursed just as appropriations for rivers and harbors are; that reports on flood projects shall be referred to the Board of Engineers for Rivers and Harbors, approved by the chief, etc. We did not declare our intention ultimately to expend large sums of money.

Senator KENYON. That was not necessary, was it?

Mr. HUMPHREYS. Surely not. In fact, it would have been useless, because we could not bind any subsequent Congress by a mere declaration of purpose.

No. 2 of their recommendations is:

> That the boards and the other parts of the machinery provided for shall be directed to continue the work on the lower Mississippi substantially under existing plans and to proceed with the investigations and the elaboration of plans on other parts of the Mississippi River and other rivers of the Nation.

Now, we do comply literally with the suggestion that the work on the lower Mississippi be continued substantially under existing plans, and we create machinery whereby investigations and the elaboration of plans for the control of floods in the other rivers of the country may be had; but, for the reasons I have already given, we provide that the particular problems to be investigated shall be designated by Congress.

Their third recommendation is—

> That all the available agencies of the Government shall be coordinated in this endeavor to improve and protect our rivers, to control floods, to utilize waters, and to reclaim valuable lands and make the necessary reports to Congress as bases for additional appropriations.

Now, this we do explicitly. In line 24, page 7, the bill provides:

> And the heads of the several departments of the Government may in their discretion upon the request of the Secretary of War detail representatives from their respective departments to assist the engineers of the Army in the study and examination of such watershed to the end that duplication of work may be avoided and the various services of the Government economically coordinated therein.

Senator JONES. Do you not think that ought to be modified a little so that if any other department should ask to be represented it could be represented without the Secretary of War permitting it to be done, not leaving it entirely to his discretion? Do you see any objection to that?

Mr. HUMPHREYS. No; but the Secretary of War does frequently now call for information, etc., which has been obtained by the bureaus in the other departments.

Senator JONES. Suppose he does not call for it, but the Secretary of the Interior would like to have him act in conjunction?

Mr. HUMPHREYS. Your proposition is to compel the Secretary of War to request that one of these men——

Senator JONES. That the other secretaries be permitted to file any statement or report that they might make with his report; not that he is necessarily governed by it but submits it along with the others. I would not interfere with the jurisdiction of the Secretary of War, except to require him to permit the other Cabinet officers who might want a representative—to permit him to be there and sign any report he might wish to make.

Mr. HUMPHREYS. I can see no objection to that, although I can not believe that it is necessary. The Secretary of War, I am sure, would always agree to that without any statutory compulsion. I call attention to this provision of the bill to show that there is no narrow limitation proposed, as has been suggested, when these flood problems are to be investigated, but that every agency of the Government can be coordinated and will be in these investigations.

The last recommendation of these Secretaries is:

> That the expenditures for this work should in the main be made by the sale of national bonds and that the lands benefitted should be made to bear a proportion of such expenses, agreements in this regard to be submitted to the Congress as part of the plans for developments.

Except for the issuance of bonds this recommendation is complied with literally. There is no occasion, in my opinion, to issue bonds for this purpose. I hope that you Senators will bear this fact in mind: We are not adopting any new project for the Mississippi River; we are simply providing for the expeditious completion of a project long since adopted. For a number of years back we have been appropriating six million dollars annually for the lower Mississippi, but with no requirement of local contribution. The engineers of the Mississippi

River Commission stated to us very emphatically that if Congress would adopt what we call the continuing contract system and authorize them to proceed with assurance of several years work ahead, they could make contracts for levee work at anywhere from 10 to 20 per cent under the figures at which they now do the work, and with that authority if no contractors could be found the commission itself would feel justified in acquiring the necessary plant and could finish the levees in five years at a very radical saving to the Government. I can cite a very interesting illustration of this which recently occurred. The commission advertised for bids for the building of several million yards of levees last fall. Thirty-two contractors bid and Roach & Stancill, very large and responsible contractors, were the lowest bidders. A clause was included in the last Rivers and Harbors Bill, however, which forbade the engineers in any river and harbor work from letting any contract where the bid exceeded by 25 per cent the figure at which the engineers estimated the Government could do the work. The bid of Roach & Stancill was rejected on that account, but they answered that if the commission would give them work running through several years they would take it at the Government estimate, but that when the could only be assured of work for a single season, with the possibility at the end of that season that they would have to move their whole equipment to some other part of the country, they must necessarily include that probable expense in their bid. Now, this bill proposes to put this work under continuous contract and complete the levees in five years. It increases the annual appropriation from six million to nine million dollars, but does that with the absolute assurance of our engineers that by so doing we will save at the very lowest estimate " well above 10 per cent," which was Col. Townsend's statement, and possibly 20 per cent, which was the opinion of several other members of the commission. If the Sacramento River is to be improved, according to the plan of the California Débris Commission, and I hardly think anyone will doubt that it will be so improved, Congress will certainly adopt exactly the same plan carried in this bill. From this it will be seen that the annual expenditures of the Government will be increased very little; certainly not enough to justify a bond issue.

Senator SHERMAN. Does this provide for the municipality or the State issuing bonds and the turning over of the proceeds to the board?

Mr. HUMPHREYS. We leave that entirely to the commission. That has been the practice heretofore. They have found from long experience that they can work very harmoniously together. For instance, the commission want a line put here [indicating and illustrating], say; they do not put it there, but they have the State engineer locate the line and then whatever damages may accrue against the State and not against the Federal Government.

Senator SHERMAN. May I make another inquiry?

Mr. HUMPHREYS. Yes; certainly.

Senator SHERMAN. Would you favor a section in the bill providing that when the proceeds of local bonds in the State or district had been turned over to the Government for use that these local bonds be made incontestable? The reason I want to know is because they are marketing bonds on the general market in the West, bonds of the Mississippi Valley country, and there has been a great deal of trouble in regard to the validity of the bonds. If there was some provision of this kind in the bill, I think that a 5 per cent or 4 per cent bond could easily be sold on these local levee districts.

Mr. HUMPHREYS. I hardly think the Federal Government would have any power to declare the bonds of local boards incontestable.

Senator REED. I want to ask unanimous consent—I can not stay here now—to have my vote cast in favor of reporting this bill in its present form, favorably.

The CHAIRMAN. Is there any objection?

Senator REED. And against any substitute that may be offered. I leave my vote to Senator Vardaman.

The CHAIRMAN. There seems to be no objection.

Senator SHERMAN. After the proceeds are used, and the Government, in a sense, becomes a party to it, jurisdiction in a suit to collect from these securities should be vested in the Federal courts.

Mr. HUMPHREYS. These various districts have been operating for many years. They already have a very good credit in the market. They have been issuing bonds all along and now owe more than $20,000,000 of money on outstanding bonds.

Senator SHERMAN. What is the average per cent?

Mr. HUMPHREYS. It is usually 5 per cent. It used to be more before their credit became so well established.

Senator SHIELDS. The per cent is 4 or 5?

Mr. HUMPHREYS. Yes; 5.

Senator VARDAMAN. In some districts they are lightered before they are sold.

Senator SHIELDS. All of them?

Senator VARDAMAN. There is no bond that is not litigated.

Senator SHERMAN. Without such a provision as that I have suggested, the value of these bonds is largely destroyed, not only on the local market, but when they go into the Chicago market, purchasers there won't buy that form of security.

Senator SHIELDS. Senator Vardaman, how is that question of validity raised before they are sold?

Senator VARDAMAN. When these bonds are issued, there is generally a question raised before they are sold, between the taxpayers and the board.

Senator SHIELDS. I see.

Senator SHERMAN. I am not referring to that class of bonds. It is where the bonds have been issued, or the money paid, and they are in the hands of innocent holders. The supreme court of the State has held that a defect in the petition filed invalidates the bonds.

Senator VARDAMAN. That was so heretofore.

Senator SHERMAN. That was within the last 90 days.

Senator SHIELDS. That would not be so in the case of bonds that are litigated before they are sold.

Senator SHERMAN. That is not the kind of bond I am referring to. The St. Louis bond market is not run in that condition. I wish it were.

Senator VARDAMAN. We have not had any trouble at all in selling these levee bonds.

Senator SHERMAN. There has been trouble in the last 90 days, as I have stated.

Senator VARDAMAN. The passage of this bill will greatly enhance the value of the property to be protected by these levees, and will enable the people who are to bear a large proportion of the expense of constructing levees, to issue more bonds and to sell them, probably at better rates.

Senator SHERMAN. If my suggestion were adopted, these improvements would be made after the Government becomes a party to the transaction; and this should justify the hope that there will be a general bond market in which these bonds could be sold like a Government bond. I think the adoption of such a principle would vastly increase the market for these bonds. As it is now, it is impossible for a person in Illinois, Iowa, or Michigan to buy a bond in the lower Mississippi Valley. You can not get your clients to invest.

Senator SHIELDS. We have no trouble selling them.

Senator SHEPPARD. There is not, as long as the demand is a local product, but when we begin to run up to $158,000,000, then it presents a different proposition.

Senator JONES. As I understand the bill from a hasty reading, no survey looking to flood control can be made unless it is expressly authorized by Congress, and then it goes through the regular proceeding. Is that correct?

Mr. HUMPHREYS. Yes; for instance, instead of taking the whole Ohio Valley and saying we will make a thorough and comprehensive survey of that for all of the various purposes contemplated by the Newlands bill, Congress would designate the particular tributaries which it desired investigated. I stated before that it would probably cost $10,000,000 to make this comprehensive and elaborate survey of the Ohio watershed, and I base this on a statement of Col. Townsend, which appears in the hearings before the Committee on Flood Control in the House. He states that the survey of Great Britain cost $186 a square mile; Germany, $179 a square mile; Austria, $400 a square mile; the Great Lakes survey of the United States, $151 a square mile. The Geological Survey spent from $9 to $15 a square mile, but their maps are not in sufficient detail to answer our purposes. The surveys which have been made by the Mississippi River Commission cost from $48 to $57 a square mile. Now, instead of ordering this general survey, we attack the problem in detail. We take, for instance, the Scioto, the Miami, the Wabash, and so forth. I think we have ordered a survey of 10 streams in the Ohio Valley, and after a very careful preliminary examination the Chief of Engineers ascertains that a detailed survey could be made of all these projects, giving all the data necessary for a comprehensive and thorough treatment of all the problems involved, at something more than $400,000. This is contained in House Document 1792, Sixty-fourth Congress, second session.

Senator Jones and I, I am sure, have had enough experience in these matters to know that it is very hazardous to proceed with any undertaking upon mere theory without first subjecting the proposition to very critical examination by the engineers. I was interested yesterday in the statement of Senator Newlands about the treatment of the Sacramento and San Joaquin Rivers. The problem of the Sacramento Valley is to get rid of the floods. The problem of the San Joaquin is to get water on their dry lands. Now, the Senator suggests that instead of taking the flood waters from the upper reaches of the Sacramento and carrying them into the sea here [indicating], "as though they were something vile," to use his language, that they should be conducted down here [indicating] through a canal and spread out on the arid regions of the San Joaquin. Well, this sounds good; in fact, reasonable and feasible. The trouble, however, is that God did not build that country on the same plan that the man made this map on. If the country there were as flat as this map, the problem would be an easy one, but when the engineers examined into the question they ascertained that the highest elevation here [indicating] in the Sacramento watershed at which a reservoir could be located was 400 feet above the sea; whereas, in order to get that water to the arid reaches of the San Joaquin it would have to be conducted over a ridge fourteen hundred feet high and the excavation necessary would be more than was necessary at Panama.

Senator JONES. How far up the San Joaquin would that bring it?

Senator NEWLANDS. That is you assertion.

Mr. HUMPHREYS. No; I was never there in my life. That is what the engineers of the United States Army assert.

Senator KENYON. That could be done for about $400,000,000?

Mr. HUMPHREYS. I think it could, most likely.

Senator JONES. How far up the San Joaquin, if you did that, would that take the water?

Mr. HUMPHREYS. I think that would take it to the arid lands.

Senator BANKHEAD. Mr. Chairman, we have to adjourn now in a minute, and I want to ask the gentleman from Mississippi, Mr. Humphreys, if it is true that it is necessary to revet both banks of the Mississippi River for every mile of the river?

Mr. HUMPHREYS. It is not. I explained that before you came in, Senator. It is not at all necessary.

Senator BANKHEAD. Senator Newlands suggested here yesterday it was, and I was sure he was mistaken.

Senator NEWLANDS. What I said was that I did not doubt that in time the entire bank could be reveted, except in places where there is sufficient bank now, but we would be a hundred years yet in improving the Mississippi.

Senator SHIELDS. I think I understood you to say that this Newlands amendment was offered in the House—this present bill introduced by you.

Senator NEWLANDS. The Newlands bill?

Senator SHIELDS. We all know what the Newlands bill is.

Mr. HUMPHREYS. Twenty-one to 186 is my recollection of the vote on that question by which the substitute was rejected.

Senator SHIELDS. After an exhaustive debate on it?

Mr. HUMPHREYS. Yes, sir. Now, as to the question of whether reservoirs on the upper reaches of the Mississippi would control its floods. The Pittsburgh Flood Commission has estimated that reservoirs can be constructed in the watersheds of the Allegheny and the Monongahela Rivers at a cost of $20,000,000, which they think would relieve the flood situation at Pittsburgh. United States Army engineers have stated that in their opinion these reservoirs will cost nearer forty than twenty million dollars. At any rate, they are to have a capacity of 59,000,000,000 gallons of water. Now, that is a good deal of water—sufficient, I think, to appeal to the imagination even of my friend here, the Senator from Texas. Fifty-nine billion gallons of water—I mean flood water—over and above a bankfull stage, passes down the Mississippi River in flood time in seven hours. At the same rate of cost, then, assuming the Pittsburgh Commission's estimate of $20,000,000 to be correct, it would require $72,000,000 to build a reservoir large enough to hold the flood waters of the Mississippi River for 24 hours. Now, those floods last from 30 to 60 days, so by multiplying $72,000,000 by as many days as you choose to guess the flood will last, you will be able to approximate the cost of controlling the floods of the Mississippi by reservoirs.

In view, however, of the fact that sometimes the storms which give us our floods occur in one place and sometimes another, it would be necessary to construct such reservoirs in several different places or to locate one near the mouth of the Ohio River. This is where engineers say it would have to be located in order to catch the flood waters from whatever source originated. This would require a site about the size of the state of New Jersey excavated to a depth of some 15 to 20 feet, and the dirt excavated, assuming the ground was level with no hills to remove, would be sufficient to build a levee 150 feet high, 7,000 miles long. It is insisted also that these reservoirs could be used for the development of water power and in that way pay for themselves. Hydroelectric power can not be economically produced without continuous flow of water through the turbines. Nobody at all familiar with the subject will controvert that proposition. This, of course, means that the reservoirs must be kept full of water. In order to be at all effective in controlling floods the reservoirs must be emptied as soon as the storm passes in order to be ready to take care of the flood waters of the succeeding storm. The answer, I think, is patent.

Mr. VARDAMAN. Mr. Chairman, the Secretary of War is here, and I suggest that we take a recess for 15 minutes, or something of that kind, to go down to roll call and return here.

(Whereupon, at 12.15 o'clock p. m., the committee adjourned until to-morrow, Friday, December 22, 1916, at 10.30 o'clock a. m.

RIVER REGULATION, FLOOD CONTROL, AND WATER CONSERVATION AND UTILIZATION.

FRIDAY, DECEMBER 22, 1916.

United States Senate,
Committee on Commerce,
Washington, D. C.

The committee met at 10.30 o'clock a. m. in the committee room, Capitol, Senator Duncan U. Fletcher presiding.

Present: Senators Fletcher (chairman), Shields, Vardaman, Kenyon, Jones, Watson, and Sherman.

The committee resumed the consideration of the bill (H. R. 14777), "An act to provide for the control of the floods of the Mississippi River and of the Sacramento River, Cal., and for other purposes."

The Chairman. The committee will come to order.

Senator Vardaman. Mr. Chairman, I notice that the Secretary of War, Mr. Baker, is here, and I move that the committee hear him at this time.

The Chairman. I understand it is the order this morning that we shall proceed to hear the Secretary's statement. We will be glad to hear you now, Mr. Secretary.

STATEMENT OF HON. NEWTON D. BAKER, SECRETARY OF WAR.

Secretary Baker. Mr. Chairman and gentlemen of the committee, I came into the consideration of the problem presented by Senator Newland's substitute after it had been pretty thoroughly considered by a group of members of the Cabinet, my predecessor, Mr. Garrison, being one of those. I understood when I came that a difference of opinion had developed between Mr. Garrison and other members of the Cabinet, chiefly, so far as I could analyze it, from the fact that the Secretary of War felt that the Engineer Department, which had for a great many years been giving expert, and more or less exclusive, attention to the subject of navigable rivers, was so well equipped to continue that subject that it would be a pity to divide its responsibility and authority by coordinating it with any other branch of the Government. All of the other members of the Cabinet, so far as I am advised, were in favor of some such plan as Senator Newlands has proposed.

I went over very carefully all the bills and written evidences in that controversy or discussion and became entirely satisfied that the uses of water were so closely related one with the other that it was highly desirable that there should be some coordinating influence in their consideration and study from the administrative and executive side, and, and so I found myself in perfect agreement with the plans that Senator Newlands now has.

The original form, as you gentlemen all know, of Senator Newlands' proposition was not only the creation of a Cabinet commission for the consideration of all the uses and purposes of water, but also that the Government should commit itself to the continuing program of large expenditures, and that the disbursement of this sum should be more or less an administrative function rather than a legislative function.

The result of a good many conferences which I personally had with Senator Newlands and Senator Ransdell, and some with Mr. Humphreys, was that the plan finally got itself to a place where it was agreed that the flood-control bill, or the idea of the flood-control bill, and of the improvement of the lower Mississippi and Sacramento streams should be consolidated with the Newlands idea, or rather that we would recommend that be done, and that a Cabinet commission should be created by the act, strengthened perhaps by outside experts, who would consider each water question from all points of view that might properly be affected.

You gentlemen have before you the hearing that was had during the summer, the testimony of the experts of the Agriculture and Interior Departments, and, I think, of the Department of Commerce. I read that testimony last night, and it seems to me it shows very conclusively how impracticable it is to consider any one scheme of river improvement or water control, or water use, without having in mind or paying proper attention to the other uses and things that ought to be done.

So the whole purpose of my coming this morning is to add my testimony in strengthening and supporting, as far as it may do it, the suggestion which Senator Newlands has that the wise policy for the Government is to have not one exclusive officer considering one aspect of water and another considering another aspect, but to coordinate the members of the Cabinet who deal with those related questions in such a way that their subordinates will give well-rounded consideration to each water project and present it to Congress considered from all points, digested and analyzed from all views.

I have been told, although I do not know what the fact is, that if it is not true it will be before very long that in a great many places in the United States the engineers of the Government have to use different colored stakes to indicate which set of engineers' particular lines are being run by, and sometimes you get out in places where surveys are being made and find three or four different colored sets of stakes, showing that the Coast Survey people are running their lines, and the War Department people are running their lines, and the Agriculture Department people are running their lines, and the Commerce people are running their lines, and they all have to distinguish themselves by different colored stakes, showing that many field parties are operating over one field instead of having a comprehensive survey made by one set of engineers which would include all parties. It is an uneconomic thing to do, and after they have made their surveys and taken them off of the different places and study each one—study their own specialty—nobody brings them into a coordinated and related whole. I do not know any other plan for an efficient consideration of the water problems of the country than to bring them under a group of Cabinet officers, each of whom has some problem relating to water under his immediate jurisdiction and control.

Senator WATSON. May I ask you a question, Mr. Secretary?

Secretary BAKER. Certainly, Senator, but I would like to finish my sentence.

Senator WATSON. Excuse me; I though you had concluded.

Secretary BAKER. Senator Fletcher had temporarily left the room, and there was one sentence which I wanted him to hear.

The CHAIRMAN. Pardon me; I had a telephone call that I was compelled to answer.

Secretary BAKER. Since I have referred to the fact that I have conferred with Senator Ransdell and Mr. Humphreys, I ought to be very explicit about what was understood, and the way I understood it, in those conferences. Senator Ransdell and Senator Newlands, as I understand, came ultimately to a perfect state of agreement about the wisdom and propriety of the Newlands proposition as it is now submitted for the consideration of this committee. Mr. Humphreys was very reluctant to yield the point of the lower Mississippi and Sacramento Rivers being included in it, and he will, I am sure, understand me when I say that at least I gathered that his chief objection to the inclusion at that time was the fear that the development of the lower Mississippi would be delayed by asking Congress to consider anything so large as the Newlands plan appeared to be.

I desired to state that because I do not want to leave it with the understanding that Mr. Humphreys at that time yielded any part of his judgment as to the wisdom of this scheme. He simply acquiesced in it as a practical thing to get forward the project which at that moment was of chief concern to him—the lower Mississippi and Sacramento added. Senator Ransdell, I understood—indeed, I am quite sure that Senator Ransdell, after deep reflection upon the subject, came to the conclusion that the plan proposed here by Senator Newlands was a wise and forward-looking step.

Senator VARDAMAN. Did he state that to you?

Secretary BAKER. Senator Ransdell, and as a matter of fact, I think Senator Ransdell's relation to this whole project is so very intimate and his study of it has been so earnest, that if it is at all possible, I suggest that the committee hear Senator Ransdell before it finally makes its report.

Senator VARDAMAN. We have already heard him, quite repeatedly.

Senator SHIELDS. Mr. Secretary, I had really understood his position to be that he did not want that matter connected up with this Mississippi project at all, because that required great investigation yet to be made, even along the æsthetic part of one provision in this bill, with respect to how the structure is to be put on the rivers, that he would like to consult the Committee on the Library and the Commission of Fine Arts.

Secretary BAKER. In the last——

Senator SHIELDS. Excuse me, I would like to finish my sentence. Senator Ransdell has been intensely interested in this subject for his people, who are being drowned and their property is being destroyed, and was almost willing to concede anything that would give him relief and not be denied the relief that this bill affords at once, and which was necessary in order to save property and life from Cairo to the Passes, and that this was under a sort of duress to prevent opposition, and persistent opposition, from Senator Newlands, that he did finally soften and was willing to do anything in order to get something done for the Mississippi River. I never understood that it met his judgment upon the matter.

Secretary Baker. There was never any suggestion of that character in the conversations that I participated in. I had the feeling and the understanding that the lower Mississippi and Sacramento projects were to be included in the bill, not as subjects for investigation, but as projects for immediate improvement in accordance with the bill of Mr. Humphreys in the House; that they were simply to be incorporated as approved projects and provision made for their immediate execution. Senator Ransdell did not seem to be under any duress or compulsion when I saw him, and was not attempting to avoid any opposition that I could discover.

The CHAIRMAN. May I say in that connection that this morning I had a telephone message from Senator Ransdell—who has, by the way, telephoned about every day regarding the bill—that he has been in hope of being out every day. He thought he would be out last Monday, but he is still confined to his room. It turns out that his chief trouble has been probable poisoning from an abscessed tooth. The tooth was extracted yesterday and he feels much better to-day, so that he thinks he may be able to be out in a few days. I say that by way of explanation of his absence and his not being able to participate with us in the proceedings this morning. But there is a very important feature in the House bill which Senator Newlands omits in his proposed substitute, and that is section 3. He regards that as a very important provision and he desires me to say to the committee that he always insisted that that provision should go in, to the effect "That all the provisions of existing law relating to examinations and surveys and to works of improvement of rivers and harbors shall apply, so far as applicable, to examinations and surveys and to works of improvement relating to flood control. And all expenditures of funds hereafter appropriated for works and projects relating to flood control shall be made in accordance with and subject to the law governing the disbursement and expenditure of funds appropriated for the improvement of rivers and harbors."

Senator Ransdell seems to have had the impression that that is an important feature which he always thought that perhaps it ought to go into the bill that is to be introduced at this session. That is his suggestion over the telephone. I am sorry he is not here to take part with us, but he still seems to think that is where it belongs in connection with the rivers and harbors bill.

Senator WATSON. I only want to ask this question, Mr. Secretary: The Mississippi proposition and the Sacramento project seem to be completed; they seem to be definite, specific propositions. Senator Newlands has incorporated both of them in his bill. There is something of an urgent necessity for the completion of both. Is it not your view then, as a practical man, that it would be well enough for us to take up these things which are part of the whole and act upon them?

Secretary BAKER. If it is true that those projects, added to the Newlands proposition, can not get through, and we can get no legislation for the Mississippi and Sacramento because of the Newlands proposition, I should be very glad to have it done, but it seems to me there is no time like the present for beginning a more scientific procedure, and I think it is a matter of very great regret that there is so little coordination between the several departments. We duplicate work; we are not coordinated as we ought to be.

Senator WATSON. Let me ask another question in that regard: This Newlands bill provides for several Cabinet members. Now, those of us who have served a long while in Congress are aware of the fact that there is something of friction and a little jealousy among the heads of the departments. If this project is to be placed under the control of the War Department, do you think it is wise to have other Cabinet members connected with it? Why should Cabinet members be taken for places of this kind? Why should not outside men be taken and one Cabinet member, if it is to be under the Department of the Secretary of War? Why should other Cabinet members be brought into it?

Secretary BAKER. The reason for that is that the Agriculture Department has a staff of experts who are considering certain phases of water, water power and water control. The Interior Department has another set of experts who consider water from an entirely different point of view. The Department of Commerce is also considering these subjects. Now, if you make a new agency you will have to duplicate all the work they are now doing or else take it away from them.

Senator WATSON. That is the point exactly. You speak of duplication. Those of us who have been in Congress a good while know that that duplication is a source of constant expenditure, and that it results in friction, and there is a lack of sympathetic coordination and cooperation to a common end. Would it not be continued? That is to say, if you add the weight of the Agriculture Department with the Secretary of Agriculture, would he not want to bring his whole force in, and would not the Secretary of the Interior want to bring his whole force in, and would you not therefore be under some difficulty?

Secretary BAKER. My experience is so limited that it could not be compared to yours, but it is quite the opposite of yours. I am a member of two or three committees of the Cabinet; for instance, the Forest Reserve Purchase Committee, which is created by statute. It is a most harmonious body, I know, and an exceedingly efficient body. It gets its work done with rapidity and dispatch and without friction. I think the difficulty—and I hope this will not seem critical of the members of the Cabinet—is that the Cabinet—has been that the Cabinet was not by law directed to coordinate, but each was given jurisdiction in which that member was supreme. Now, if they are bidden to coordinate their jurisdictions there would be no limit observable and therefore no occasion for friction.

Senator SHIELDS. I am rather favorable to Senator Watson's idea of it being all in the War Department and having all these matters transferred to it for the control of the waters, and I think one difficulty of placing it in the hands of all the Cabinet officials, and dividing the responsibility, is the fact that they now have such enormous duties that it would be difficult for them to give it that personal at tention which it would require. As I have said to Senator Newlands, I can see a great deal of merit in placing this matter under one commission, that is, the entire uses of water in every respect, but the delays in getting it all combined into one commission are so great, and the question is one of such great importance, that a measure of that kind should receive consideration in itself or it will never get out of the Senate. It would take a great deal of time to work it out. The measure will be given consideration, I believe, by the Senate and very thorough and careful and serious consideration along the line you have discussed and suggested.

Now, if that is done in the future, and such a commission created as this bill provides for, then it can be given jurisdiction over these particular projects when they are completed, but in the meantime I do not think we ought to endeavor to do anything that will delay the immediate relief that this project demands, and especially—well, I make no distinction between them. A statement made by Mr. Curry, a Member of Congress from the district where the Sacramento project lies, has shown that California is contributing so largely to it that it shows its good faith in the project, and I see no reason for not going on with it. But I am more familiar with the Mississippi project where we have had over a million dollars of damage done and thousands of people driven from their homes and quite a number drowned, and I think something ought to be done at once. Under this scheme, as proposed by the Humphreys bill, it is believed it can be done in five years, and that they may have relief at once. It puts it into operation right now and will not in any way interfere with the comprehensive scheme as proposed by the Newlands bill in the end, when they can all be united and be controlled, as the favorite expression of the Senator is, by coordination and cooperation.

Secretary BAKER. I never understood that it would be delayed.

The CHAIRMAN. Would there be any trouble about going on and taking care of this matter under the House bill? These two matters are important and pressing, and in taking care of each there would be no conflict with the general scheme and the comprehensive plan as outlined by Senator Newlands. What would be the objection to dealing with the matters separately?

Secretary BAKER. That is a legislative question, Senator, and, of course, your judgment of the best place to do it would be very much better informed than mine. My only hope is that you will not deal with things that press upon you for immediate solution and postpone the things that will wait until the time when they won't be done at all, because I think as important as the improvement of the Mississippi River is the thing of even greater importance, though very much more remote in its interests, in this comprehensive grasp of the great water problems of this country.

Senator VARDAMAN. Mr. Secretary, if you will notice this provision in the bill before the committee, the Humphreys bill provides in section 3 as follows:

> And the heads of the several departments of the Government may, in their discretion, upon the request of the Secretary of War, detail representatives from their respective departments to assist the engineers of the Army in the study and examination of such watersheds, to the end that duplication of work may be avoided and the various services of the Government economically coordinated therein.

Secretary BAKER. Yes, sir; I noticed that. Mr. Humphreys read it yesterday.

Senator VARDAMAN. It seems to me that meets the objection that you urge to the bill and prevents the possibility, as you have suggested, of duplication of work.

Secretary BAKER. The only answer possible to that, or the only observation possible on the other side, is this: As pointed out by Senator Watson and Senator Shields, the department heads are very busy men. Each one feels that he must do the things which you have directed him by mandatory statutes to do, and those as to which you have given him authority often assume the place of second importance. One department head will say, "I may send a representative over to the War Department if I want to, but we must do these other things that we have been directed to do."

Now, if you lay it down as a policy that before any water project can be approved by you it must have had the attention of the departments properly interested, then it will get it.

Senator VARDAMAN. Of course it is not a condition precedent to approval by Congress of anything; but presuming that the heads of departments know what ought to be done, and are alive to the great interest involved, that they should take the proper course in these matters, and under the direction of the Secretary of War with all the machinery furnished that department for acquiring information, it seems to me that the objection to this bill, or that which Senator Newlands desires, and we all desire, is that this information might be gathered in that way for the use of Congress. Of course before anything is put into operation, any reform is effected, or any scheme carried out it will require congressional action; but to hold up this plan, this measure of such pressing necessity, until Congress and the American people can become informed, about the many questions proposed in Senator Newlands' bill, will not only be disastrous to the property of the individual citizens located on the banks of the rivers but will result in a great waste of Government property. There have been millions of dollars lost in leveeing the Mississippi River; because of this piecemeal work the levees have been washed away. The banks have been washed out and the levees are caving in.

Now, the most economic thing is, it seems to me, for the Government to carry on these great projects that have been worked out, and all the necessary information acquired and assembled and brought together for the completion of these projects. I do not think this bill means that it is going to delay the work that Senator Newlands desires, but the things that are needed to be done now which, when completed, will be part of the whole great plan that he has outlined. If anything had to be torn away or torn down, if it were a mere makeshift that we proposed to carry out in the lower Mississippi or Sacramento, it would be a different thing. But we are laying the foundation upon which any superstructure may be constructed.

Senator Newlands's idea is that if these two projects are carried out his will be linked on to them.

Now, the legislative mind is a peculiar thing. I stated just this morning that the psychology of Congress is a very interesting subject to me. It takes time to convince men that this enormous outlay will be profitable to the American people. Now, if we can go ahead and execute these plans, with the machinery provided in the Humphreys bill for acquiring information, it seems to me it would be a long step forward in the direction of the accomplishment of the work that Senator Newlands wants, or desires to be accomplished by his bill. If we do not pass this bill right away, there is doubt about this Congress enacting the Newlands plan, and it is a matter of very serious concern to the people living on the Mississippi River, and a matter of great concern to the people in the Sacramento Valley. Now, the point is, are these things so needful that they should be done and done right now and be a saving to the people living on the banks of the river, and a saving to the people of the country generally—that is, to the Government? It will really further the work that Senator Newlands and you desire to accomplish, it seems to me.

Secretary Baker. Of course, you know the psychology both of the public mind and of the legislative mind better than I, but I should think it would be better appealed to by a provision in this bill which showed that these were not two relatively local projects, but a part of the national scheme, and that every part of the country were going to benefit by it.

Senator Vardaman. That fact is recognized, as it is a part of the scheme, by Senator Newlands in his amendments. That fact is recognized that it is part of this great scheme.

Senator Shields. I suggest, with respect to the question of psychology extending beyond Congress to the whole American people—that all of the platforms of the great parties in the United States—the three parties in 1912 recognized this scheme as to the Mississippi River as a national project and a national burden, as it is a ditch to drain 32 States and more than half the territory of the United States, and it was recognized that it was wrong, not only wrong but impossible, for the States affected from Cairo down where the great floods do their damage—to take care of it, and that the Government should take care of it.

Now, supplementing what Senator Vardaman has said as to the immediate relief needed, and as to the practicability of getting this other legislation which has been thoroughly considered and canvassed at this session—I call attention to what was stated by Mr. Humphreys yesterday with respect to the action of the House. I do not know whether you were present, Mr. Secretary, or not. There, after three days' debate, the substitute bill of Senator Newlands was rejected by a vote of about 198 to 25. So it is evident that the bill as presented here, if we were to pass it, would not be passed by the House.

Senator Kenyon. That is not identical with the Newlands bill now.

Senator Shields. No; but substantially it adopts that scheme.

Senator Kenyon. That is, with regard to the $60,000,000?

Senator Shields. No; but the scheme to take this all into one comprehensive scheme. That is the principle underlying it all, and if that is to be placed in this bill now—which you might call an emergency measure—we would get no legislation on the subject through this Congress. I think the Newlands bill is one of such enormous possibilities, and is so far-reaching, that Congress will never pass it without mighty thorough investigation and consideration, such as can not be had at this session of Congress.

Secretary **Baker**. I would like to add a sentence for the record. If the observation made by Senator Shields indicates that what I said before showed a feeling on my part that the improvement of the lower Mississippi is in any sense a local project rather than a national project, I either spoke incorrectly or was misunderstood. I know of no national project more national in its scope than the improvement of the lower Mississippi, and what I intended to say was, that as compared with a scheme which took in the entire country and looked to the ultimate improvement of all of the rivers, it was relatively local.

Senator **Jones**. Mr. Secretary, with reference to the suggestion——

Senator **Newlands**. Mr. Chairman, will you permit me to answer the suggestion of Senator Shields?

Senator **Jones**. Just one moment, Senator. Mr. Secretary, in connection with the reading of the clause in the Humphreys bill by Senator Vardaman a moment ago you suggested that the departmental heads feel that they must do what they are directed to do, and are apt to leave off what is left to their discretion. Would not that suggestion be made now—and I want to call this to the attention of Senator Vardaman in order to see if he would have any objection to it—if the Humphreys bill read something like this?—

> The Secretary of War shall advise any department that may be interested in a project of the purpose to take up any proposed project, and the heads of the several departments of the Government interested or affected shall detail representatives from their respective departments to assist or cooperate with the engineers, etc.

Would not that meet the suggestion you have made?

Secretary **Baker**. I think that would help it, although, as far as the Humphreys measure is concerned, if I correctly understand it, it deals with an approved project.

Senator **Jones**. No; I mean with respect to all projects.

Secretary **Baker**. Then it would undoubtedly be strengthened by what you have suggested; undoubtedly.

The **Chairman**. That is part of section 3?

Senator **Jones**. Yes.

Senator **Newlands**. Mr. Chairman, will you permit me, in connection with Senator Shields's statement regarding the platforms of 1912 and 1916, to say that the platform of the Republican Party was general, and, of course, covered both the general plans and the Mississippi River project. As far as the Democratic platforms are concerned, they called specifically for general plans, comprehensive plans, coordination, and cooperation; in fact, everything is called for that I have been urging for so many years, and it is my judgment that the country is dissatisfied with the piecemeal system of appropriation, and the platforms attested the public appreciation of the fact, and the public demanded that the legislation hereafter should be general and comprehensive, and that was the very purpose of the movement which was inaugurated 12 years ago, and which was ratified, in my judgment, by the platforms of both parties.

Senator **Jones**. What did you say about the Republican platform, Senator?

Senator **Newlands**. I stated that the Republican platform—I do not know exactly what I stated, but I intended to state that the Republican plaform was general in its terms.

Senator JONES. It refers specifically to the Mississippi River.

Senator NEWLANDS. Yes; I have it here. It does not say that the lower Mississippi River is a ditch. It is a tributary.

Senator SHIELDS. I referred especially to the platforms of 1912. I know they all three recognized the importance of flood control on the lower Mississippi, that they do great injury, and that it is a national obligation. I do not know what the last declaration upon the subject was.

The CHAIRMAN. Are there any further questions to be asked Secretary Baker?

Senator KENYON. I would like to ask the Secretary a question. Do you not think, where a project of this kind results in the reclamation of large quantities of land, as shown here—some sixteen to twenty million acres—that you will increase the value that that land ought to bear by being part of the burden?

Secretary BAKER. That, of course, is not related to this particular subject, and I can express only my personal view upon it. It has never been the subject of conference with any of my associates, but I think, obviously, the increased value that flows from improvement ought to pay for the improvement to the extent that it is sufficient.

Senator KENYON. A fair share of the improvement?

Secretary BAKER. Yes; up to the value of the increment.

Senator JONES. Why do you say it is not involved in this proposition?

Secretary BAKER. I do not mean it was not involved in this proposition, but I mean it is not involved in the subject which has been discussed by members of the Cabinet as to the value of creating a supervisory council rather than having Cabinet officers.

The CHAIRMAN. Mr. Secretary, the committee is very much obliged to you for appearing before it.

The CHAIRMAN. The committee will now hear Mr. William W. Scott.

STATEMENT OF MR. WILLIAM W. SCOTT, ATTORNEY AT LAW, WASHINGTON, D. C.

Mr. SCOTT. Mr. Chairman and gentlemen of the committee, I will be as brief as I can, only giving you a general statement as to the subject matter covered by Senator Vardaman's proposed amendment. This matter was very thoroughly gone into in 1914——

Senator KENYON. What is this amendment to which you refer?

Senator VARDAMAN. It is an amendment to take care of these people.

The CHAIRMAN. It is with reference to the riparian owners.

Senator KENYON. You have an amendment of that kind?

Senator VARDAMAN. Yes; I have two of them. They were introduced at the last session.

Senator JONES. I suggest that you read your amendments, so we will have an idea about them.

Senator KENYON. You represent these people, do you, Mr. Scott?

Mr. SCOTT. I am appearing here at this time on behalf of what is called the Riparian Association. It is an association of landowners on the east bank of the Mississippi River from Vicksburg to Baton Rouge, in this strip of territory shaded in pink [indicating on map].

Senator KENYON. What do they want?

The CHAIRMAN. Perhaps as an indication of who Mr. Scott represents I had better have incorporated in the record a telegram received from those gentlemen, stating that he would appear for them. They did not have time to assemble their committee.

(The telegram referred to is here printed in full, as follows:)

NATCHEZ, MISS., *December 18, 1916.*

Senator DUNCAN U. FLETCHER,
Care United States Senate Chamber, Washington, D. C.:

Your valued notice by wire, fixing hearing for riparians Tuesday, 19th, at 10 o'clock, received 3 o'clock 16th, but delegates were scattered over 300 miles territory, and most strenuous efforts by wire and phone failed to get delegates, especially the most important ones, to start in time to reach Washington on fixed date. We regard this hearing of such vital importance to the riparians of Mississippi, Tennessee, and Louisiana that we have arranged by wire to have Gen. Scott, of Washington City, to present the case for us, and we earnestly request you to allow him to present the case in full before the committee. We fully advised him of the deplorable situation in case the flood-control bill passes without making provision for the east-bank lands, and he will be prepared to answer all questions and make all statements as fully as if we ourselves could do if actually present. Please accept profound thanks of the association for granting us this opportunity, and be assured that nothing but the lack of one more day's time prevented our appointed delegation from being present in full force.

JOHN F. JENKINS, *Secretary.*

Senator JONES. I suggest, Mr. Chairman, that we have this amendment read.

Mr SCOTT. It is an amendment intended to be proposed by Mr. Vardaman to the bill H. R. 14777, and is as follows [reading]:

AMENDMENT intended to be proposed by Mr. Vardaman to the bill (H. R. 14777) to provide for the control of the floods of the Mississippi River and of the Sacramento River, California, and for other purposes, viz: On page 3, line 2, after the word "contributing," insert the following:

Provided further, That if, in the opinion of the commission, it be impracticable or inadvisable to levee any basin or territory subject to overflow by said river, and which has already been damaged by the construction of the levee system as shown by the report of said commission, then the title to said lands shall be acquired by the Government by purchase or condemnation, for the use of river improvement, or full compensation shall be awarded the owners thereof for all damages caused by levee construction. And if, within 12 months of the passage of this act, no steps have been taken to condemn said land, or the owner be not satisfied with the price offered and compensation for damages has not been paid, he may file a petition in the Court of Claims setting forth his damages. And the Court of Claims is hereby given full jurisdiction and directed to forthwith proceed to adjudicate the same to judgment.

Senator KENYON. That is rather inconsistent with provision "d," is it not, that no money shall be appropriated for the payment of any right of way which may be constructed under the authority of this act? This enables the commission to pay these people, does it not?

Senator VARDAMAN. Yes.

Senator KENYON. For all the damages they have suffered?

The CHAIRMAN. Not merely the right of way.

Mr. SCOTT. If you will permit me, I will give you a little statement as to the history of these claims, and then I think the members of the committee will understand the matter a little better.

The Mississippi River Commission, as you all know, was created in 1879. The first money expended for levee construction was in the early eighties, and the effect of levee construction on the east-bank land was not felt until 1884, 1885, 1886, and in the nineties. In 1894 these same people who are asking relief to-day appeared before this same committee and before the House committee. Capt. Jenkins, for instance, was here in person 20 years ago. The committees at that time recommended an appropriation, or part of an appropriation, to the extent of $30,000, to be all expended in the Homochitto levee district—that is, the district in Mississippi covering five counties in Mississippi and one parish in Louisiana on the east bank.

The Mississippi River Commission followed that in their reports of 1894, 1895, and 1896, wherein they reported in detail and recommended to the Congress that it be given full consideration, that its importance was great and that Congress should give it the consideration that its importance merited.

Now, this land, which is shown here [indicating], has been in the ownership of these people for 100 years. It was cultivated years before the land on the east side was cultivated. It is much higher. Crops to the value of $50,000 a year of cotton were taken from some of the plantations. Then the commission in their report of 1910 reiterated what they had said in the earlier reports, and recommended three ways for Congress to settle with these landowners for the land taken, and I may say, for their land used in river improvements. One was to buy the land for the use of river improvement, stating that the willows and cottonwoods growing thereon could be used for river improvement—that is, in the making of mattresses. This land that has been taken and used is on the east bank. At Eagle Lake, just north of Vicksburg, the levee line on the east bank has been connected with the foothills. At Baton Rouge, or just north of Baton Rouge, and the levee line extending north from the Head of the Passes has been connected with the foothills. All along this section the Government is using the foothills to-day as a levee. They have surveyed this land and estimated the cost of construction of levees along this stretch of 234 miles, following the river, at 13 cents per cubic yard; and that it would cost from two to four times as much to build levees as it would cost to pay for the land.

In 1912 there was a provision put in the rivers and harbors act appropriating $30,000 to survey this same land. The commission expended that money in the survey of the lands and made report. That report is set out in House document 1010, Sixty-third Congress, third session, and that report again reiterates what the commission said in the earlier years as to these lands; that the title be acquired by the Government for use in river improvement. In 1914 you will find that this subject was treated fully by representative citizens from along the river and Members of Congress from Mississippi and Senators from Mississippi. You will find it all printed in parts 6 and 8 of the hearings on the bill for that year. Representative citizens were also before your committee last June, the 24th, and were heard on this subject.

Senator Jones. Will you not tell us in brief anyhow what you consider the essential points. Otherwise we would have to examine all these documents.

Mr. Scott. The essential point is this, that these people have been driven from their homes. There are piles of sand on some of this land as high as the ceiling of this room, and at other portions there are gullies washed in on a man's plantation as deep as the ceiling of this room is high.

Senator KENYON. And that is done by the construction of these levees by the Government on the other side of the river?

Mr. SCOTT. Absolutely; it makes a reservoir, you might call it, in these small basins here [indicating].

Senator JONES. As I understand it, the levee, as a levee, comes up to that red mark there [indicating]?

Mr. SCOTT. Yes, sir; on both sides to Baton Rouge.

Senator JONES. And there connect with the foothills on both sides?

Mr. SCOTT. Yes, sir; on the east side.

Senator JONES. And it comes down on the west side from above that mark, and between those two marks on the east side of the river; the levee is really the high ridge of hills or bluffs along there?

Mr. SCOTT. Yes, sir.

Senator JONES. And whatever lands lie between that ridge and the river are subject to overflow, and all that sort of thing?

Mr. SCOTT. Yes, sir.

Senator VARDAMAN. Caused by the building of levees on the west side.

Senator KENYON. Would that not overflow the east side?

Mr. SCOTT. Never to the extent of destroying their value as cotton plantations.

Senator KENYON. But they are always overflowed to some extent?

Mr. SCOTT. Yes, sir; but not all of them.

Senator VARDAMAN. The levees were built 10 or 15 feet higher.

Mr. SCOTT. This shaded line and the green line here [indicating] represents the width of high-high-water bed prior to levee construction, which was approximately 70 miles. Now the high-water bed is confined between these colored lines on either side of the river, which is anywhere from 2 to 4 miles wide.

Senator JONES. Where is the west levee on the Mississippi River down below there?

Mr. SCOTT. It is right here [indicating].

Senator JONES. Where is the Mississippi River?

Mr. SCOTT. It is this green line right here [indicating].

The CHAIRMAN. It was the building of the jetties on the Arkansas side that threw the water over on the east side, was it not?

Mr. SCOTT. It was the building of the levees on both sides of the river north of Vicksburg, confining that water in a narrow space and obstructing the natural flow of the water on the west side for a distance of 234 miles to Baton Rouge, and then choking the stream and obstructing the natural flow of water on both sides of the river south of Baton Rouge, which caused this water to choke up and fill the basins.

Senator KENYON. Choking it by what?

Mr. SCOTT. By narrowing the stream.

Senator KENYON. And by building the levees?

Mr. SCOTT. Yes; sir.

Senator KENYON. Well, if we pursue the plan in this bill of constructing levees we are going to have no trouble where there are no levees.

Mr. SCOTT. No, sir; the Mississippi River Commission has time and time again said that it was cheaper to destroy this land than to build the levees, and use the foot hills instead for levees, and that is what they are doing to-day.

Senator JONES. How many acres have been destroyed in that way?

Mr. SCOTT. In this stretch, approximately 500 acres.

Senator JONES. Does that cover the whole stretch that is involved?

Mr. SCOTT. No, sir.

Senator JONES. I want to know in detail the amount of acreage that they recommend ought to be bought.

Mr. SCOTT. They recommend that this stretch here [indicating] should be bought, and there are certain sections up in Tennessee, way up near the Kentucky line.

Senator JONES. In other words, what Senator Kenyon has just suggested is apt to occur up the river as the levees are taken up?

Mr. SCOTT. With the exception of a short stretch near Bessie, in Lake County, Tenn. In this section here [indicating] the levees protect it all.

Senator JONES. How many acres are involved in both places?

Mr. Scott. In the report numbered 1010, I think they put it at approximately a million acres.

Senator KENYON. Under this amendment, the Mississippi River Commission you understand can buy that land?

Mr. SCOTT. Yes, sir.

Senator KENYON. That is what those people want to do, to sell it to the Government?

Mr. SCOTT. They want relief, and that is the most plausible way to give it to them. The land has been destroyed for agricultural purposes and therefore it would not benefit them to build a levee in these small basins.

Senator KENYON. Of course, they have tried this matter out in the courts, have they not? Has it not gone to the Supreme Court of the United States?

Mr. SCOTT. They have tried it out in the Jackson case and the Hughes case in the Supreme Court, and the Archer case and the Overton case.

Senator KENYON. They have no legal redress?

Mr. SCOTT. In the Archer case it was remanded to the Court of Claims for further findings. In the Jackson and Hughes cases the landowners lost, the Supreme Court holding that the damage to land on one side of the river as a consequence of building levees on the other side should not be paid for. But in another case a few years earlier, reported in 221 United States, at page 636, the case being Hopkins *v.* the Clemson Agricultural College of South Carolina, Justice Lamar, speaking for the court, said that the land destroyed on one side of the river as a result of building levees on the opposite side must be paid for.

Senator SHIELDS. I read those cases when we had this matter up about two years ago, but am not very familiar with them now. Was that South Carolina case a case between the Government and the individuals or between the individuals and the State?

Mr. SCOTT. No, sir.

Senator SHIELDS. I think beyond all question the law is well settled as between individuals that when a man detains or accelerates or in any way diverts the natural flow of water to the injury of another he is liable in damages. But the Supreme Court would not apply that principle, whether it was on account of the magnitude of the claims or the governmental function that was being performed in this case or not.

Gen. SCOTT. In the Jackson case Chief Justice White wrote the opinion, and he applied the law as between individuals in that case and so stated.

Senator JONES. Do you mean the Jackson case or the Hopkins case?

Gen. SCOTT. In the Hopkins case also.

Senator JONES. In the Jackson case it was held there was no liability on the United States?

Gen. SCOTT. Yes, sir; and the other case the court held there was.

Senator KENYON. Which was the later case?

Gen. SCOTT. The Jackson case.

Senator JONES. What estimate has been given as to the value of these lands?

Gen. SCOTT. If you should fix the value prior to the injury done by the construction of the levee system, it would probably be $30 or $40 an acre.

Senator JONES. Thirty or forty million dollars?

Gen. SCOTT. On the subject of values, if this committee wishes the information, I can furnish it to you. It is in the hearings held in 1914.

Senator JONES. I just wondered whether in these various reports by the commission they had made estimates.

Gen. SCOTT. There is an estimate in Document 1010. You take this land in the Yazoo Basin, which was purchased by the Mississippi Levee Board; for a period of 14 years prior to 1910 they paid anywhere from $4 to $40 an acre.

Senator JONES. Does not this commission that reported on this so many times give a statement?

The CHAIRMAN. In Paragraph 85, page 12 of the report Mr. Scott referred to, it says, "In view of recent sales of lands in the basin and prices that have been quoted from time to time it is the opinion of the commission than an estimated value of $10 an acre may be regarded as the average price at which the lands whose protection is impracticable could be acquired." The total cost on that basis amounted to $6,226,210.

Senator JONES. That does not take in the lands away up above there?

Gen. SCOTT. Yes, sir; from Cairo to the Head of Passes.

Senator JONES. It is only estimated at 600,000 acres, at the average price of $10 an acre, and that would make $600,000.

Gen. SCOTT. That may be what it is.

Senator WATSON. How long since these lands have been overflowing.

Gen. SCOTT. Since the '90s.

Senator WATSON. Before the '90s they did not overflow?

Gen. SCOTT. Not to any appreciable extent.

Senator WATSON. Before that they were used for agricultural purposes, were they not?

Gen. SCOTT. Yes, sir; on some of these lands they raised crops worth $50,000 to $60,000 per year.

Senator KENYON. Have you any notion what those lands were worth on the average before the levees were built and while being overflowed to some extent?

Gen. SCOTT. I would fix it at $30 to $40 an acre.

I should like the record to show what was said in the Clemson case, and I will hand the decision to the stenographer.

The CHAIRMAN. It may go in the record at this point.

(The paper referred to is here printed in full, as follows:)

In the case of Hopkins against the Clemson Agricultural College of South Carolina, the Supreme Court of the United States (221 U. S., p. 636, 646–9; 55 Law Edition, p. 896), speaking through Justice Lamar, said:

"This is a suit aainst the college itself for its own corporate act in building a dyke, whereby the channel had been narrowed, the swift current had been diverted from the usual course across the plaintiff's farm, and, as it is alleged, destroying the banks, washing away the soil, and for all practical purposes as effectually depriving him of his property as if there had been a physical taking. (Compane Lewis, Em. Dom., 2d ed., 67; Pumpelly *v.* Green Bay & M. Canal Co., 13 Wall., 166, 20 L. ed., 557; United States *v.* Lynah, 188 U. S., 445, 47 L. ed., 539; 23 Sup. Ct. Rep., 349; United States *v.* Welch, 217 U. S., 333, 54 L. ed., 787; 28 L. R. A. (N. S.), 385; 30 Supt. Ct. Rep., 527; Chicago, B. & Q. R. Co. *v.* Chicago, 166 U. S., 226, 41 L. ed., 979; 17 Sup. Ct. Rep., 581; Farnham, Waters, 191; Conniff *v.* San Francisco, 67 Cal. 45, 50, 7 Pac. 41.)

For protecting the bottom land, the colleges, for its own corporate purposes and advantages, constructed the dyke. In so doing it was not acting in any governmental capacity. The embankment was in law similar to one which might have been built for private purposes by the plaintiff on the other side of the river. If he had there constructed a dyke to protect his farm, and in so doing had taken or damaged the land of the college, he could have been sued and (648) held liable. In the same way, and on similar principles of justice and legal liability, the college is responsible to him if, for its own benefit, and for protecting land which it held and used, is built a dyke which resulted in taking or damaging the plaintiff's farm. (2 Dill. Mun. Corp. 4th ed., 969, p. 1180. See also Jones *v.* Sanitary District, 252 Ill., 591.)

Senator WATSON. The present theory is, is it not, General, that it is much cheaper to abandon those lands and use the foothills for the levee?

Gen. SCOTT. Yes, sir; and in the report Maj. Normoylé, who expended $1,500,000 for the relief of flood sufferers in 1912, those lands are marked on his map as abandoned lands. The $1,500,000 which Congress appropriated was expended for the relief of these men behind the levee whose lands had been made much more valuable by levee construction. The levee here [indicating] is over 25 feet in height.

Senator WATSON. Do the foothills extend almost entirely along on the east bank of the river?

Gen. SCOTT. These foothills are right in here, you see.

Senator JONES. Are those lands overflowed at ordinary high water?

Gen. SCOTT. Yes, sir; at the present time, and something was said by Mr. Humphreys (of Mississippi) yesterday that these lands are sometimes covered for 60 days. In 1908 I was over that land in a boat and the flood stayed on those lands for 129 days.

Senator SHIELDS. As an illustration, this building of levees on the Arkansas side where the water used to run out 45 miles, it flooded Memphis and behind it, its waterworks and a large number of habitations that when they were built were absolutely safe from any flood in the past, but now by reason of the diversion of the water from the west side narrowing the channel the high floods reached and the last flood there destroyed over $1,000,000 worth of property in Memphis.

Gen. SCOTT. The course we ask this committee to follow is exactly similar to the course Congress provided and laid down in 1868 when it passed a law providing relief to the landowners on the Des Moines River in Iowa.

Senator KENYON. Just what was that?

Gen. SCOTT. River improvement, where the land was damaged by flowage as a result of that improvement. No remedy existed and no courts could afford relief, and Congress passed relief measures.

Senator WATSON. I think this ought to be made an amendment to this bill.

Senator VARDAMAN. We will discuss that when he gets through at an executive session. Let the witness conclude his statement now.

Gen. SCOTT. As I take it when the Congress of the United States provides legislation for the construction of any public improvement they should provide in that same law means for compensating the man whose property the Government is going to destroy as a result of that improvement. This was done in 1875 for the Fox and the Wisconsin Rivers, where Congress gave not to the Federal courts but to the State courts of Wisconsin jurisdiction to hear and determine cases like these, and they paid out anywhere from $500,000 to $1,000,000 in judgments.

Senator WATSON. How about your reasoning not applying to this because this property has been destroyed for 20 years?

Gen. SCOTT. No, sir; this property first became damaged 20 years ago and it has been the gradual damage until it reached destruction; and we have been knocking at the doors of Congress all these 20 years.

Now, following down to 1907, the river and harbor act carried a provision similar to this, almost word for word, giving landowners on St. Marys River in Michigan the privilege to come into court with their claims and having their damages assessed, and carried an appropriation of $1,500,000 to pay those damages.

Senator JONES. The purpose of the Government improvement there, however, was directly for navigation, was it not?

Gen. SCOTT. So is this.

Senator JONES. No; this goes far beyond navigation.

Gen. SCOTT. It goes beyond it. The first appropriations made for the lower Mississippi carried a provision that no money should be spent except for improving the river for navigation.

Senator JONES. I know; but we have gone far beyond that for the purposes of this bill.

Gen. SCOTT. Then the Congress became more liberal and said to protect land.

Something has been said as to the destruction of life and property. Take, for instance, the Simrall property, located in Warren County, Miss. Mr. H. C. Simrall, at one time a well-to-do attorney at law and planter, was president of the Supreme Court of Mississippi, yet as a result of diverting these flood waters over his land he died in practically absolute want.

Since I was before this committee before Dr. Walker has had his plantation sold under the hammer to pay a mortgage of $4 an acre on it. The bank bought the land to protect itself.

In the Overton and Purrier Plantation case Mrs. Overton died in the poorhouse and Mr. Purrier to-day is living on the charity of the city of Natchez. That is the extreme condition these people have been brought to as a result of Government work, and the Mississippi River Commission in its report in 1910, set out in this document 1040, says that the situation is pathetic and distressing in the extreme.

Senator KENYON. What is the date of that, General?

Gen. SCOTT. December 3, 1912.

The CHAIRMAN. That document seems to be out of print. If the committee would like to have it, we shall have to order some more copies printed.

Gen. SCOTT. The report itself covers only a few pages and could be made a part of these hearings.

Senator VARDAMAN. Let it be made a part of your remarks.

The CHAIRMAN. It may be printed at this point.

(The document referred to is here printed in full as follows:)

[HOUSE DOCUMENT NO. 1010, SIXTY-SECOND CONGRESS, THIRD SESSION.]

LANDS SUBJECT TO OVERFLOW FROM MISSISSIPPI RIVER, BETWEEN BRUNSWICK, MISS., AND BATON ROGUE, LA., AND BESSIE AND MEMPHIS, TENN.

WAR DEPARTMENT,
Washington, December 2, 1912.

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.

SIR: I have the honor to transmit herewith, a letter from the Acting Chief of Engineers, United States Army, dated November 30 ultimo, submitting a report of the Mississippi River Commission, with maps, on an examination and survey of all lands subject to overflow from the Mississippi River, situate between Brunswick, Miss., and Baton Rouge, La. (east bank), made in pursnance of a provision contained in the river and harbor act approved July 25, 1912.

Very respectfully,
HENRY L. STIMSON,
Secretary of War.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, November 30, 1912.

From: The Chief of Engineers.
To: The Secretary of War.
Subject: Mississippi River east bank surveys.

1. There is submitted herewith, for transmission to Congress, report dated October 26, 1912, by the Mississippi River Commission, made in pursuance of the following provision in the river and harbor act approved July 25, 1912:

"The Mississippi River Commission is hereby authorized and directed to make an examination and survey of all the lands, subject to overflow from the Mississippi River, situate on the east bank of the river between Brunswick, Warren County, Mississippi, and Baton Rouge, Louisiana, and between Bessie, Lake County, Tennessee, and Memphis, Tennessee, for the purpose of ascertaining the location, quantity, character, and value of such lands, and for the purpose of ascertaining what portions of such lands, if any, it would be advisable to protect from overflow by levee construction, and the cost of such construction, and for the purpose of ascertaining the cost of acquiring such portions of said lands as it would not be advisable to protect from overflow by levee protection. The commission is further directed to prepare topographic maps of the lands so examined and surveyed, and to make its report on such examination and survey, with its recommendation thereon, to the Chief of Engineers before the first of November, nineteen hundred and twelve, and the Chief of Engineers shall transmit the said report to Congress on or before the first Monday of December, nineteen hundred and twelve. The sum of thirty thousand dollars, or so much thereof as may be necessary, is hereby appropriated for the purpose of making and reporting the foregoing prescribed examination and survey."

2. Attention is invited to the provision requiring that this report should be submitted on or before the first Monday in December, 1912.

H. TAYLOR,
Lieut. Col., Corps of Engineers,
Acting Chief of Engineers.

PRELIMINARY EXAMINATION AND SURVEY OF LANDS SUBJECT TO OVERFLOW FROM MISSISSIPPI RIVER, BETWEEN BRUNSWICK, MISS., AND BATON ROUGE, LA., AND BESSIE AND MEMPHIS, TENN.

MISSISSIPPI RIVER COMMISSION,
St. Louis, Mo., October 26, 1912.

From: Mississippi River Commission.
To: The Chief of Engineers, United States Army.
Subject: Mississippi River east bank surveys.

1. The Mississippi River Commission submits the following special report required by the river and harbor act approved July 15, 1912, which states: "The Mississippi River Commission is hereby authorized and directed to make an examination and survey of all the lands, subject to overflow from the Mississippi River, situate on the east bank of the river between Brunswick, Warren County, Mississippi, and Baton Rouge, Louisiana, and between Bessie, Lake County, Tennessee, and Memphis, Tennessee, for the purpose of ascertaining the location, quantity, character, and value of such lands, and for the purpose of ascertaining what portions of such lands, if any, it would be advisable to protect from overflow by levee construction, and the cost of such construction, and for the purpose of ascertaining the cost of acquiring such portions of said lands as it would not be advisable to protect from overflow by levee protection. The commission is further directed to prepare topographic maps of the lands so examined and surveyed, and to make its report on such examination and survey, with its recommendation thereon to the Chief of Engineers before the first of November, nineteen hundred and twelve, and the Chief of Engineers shall transmit the said report to Congress on or before the first Monday of December, nineteen hundred and twelve. The sum of thirty thousand dollars, or so much thereof as may be necessary, is hereby appropriated for the purpose of making and reporting the foregoing prescribed examination and survey."

2. The above work relates to the smaller basins lying on the east side of the river, which are not now protected by levees in the general scheme for flood control. The flood protection that now exists is confined to private levees in detached reaches where a moderate amount of work has served to give some degree of protection.

3. In accordance with the requirements of the act, surveys were begun in August, 1912, and covered the several basins with a sufficient degree of accuracy to determine in a general way the practicability of protection from floods, the extent of such protection, and the extent and value of the lands. In these surveys the lands were classified as cleared, wooded, and swamp lands, and determination was also made as to the extent of the area flooded by backwater in case the basins were protected by levees. The effect of the streams which now carry the hill drainage to the river has also received consideration.

BESSIE, LAKE COUNTY, TENN., TO MEMPHIS, TENN.

4. The reach lying between Bessie, Lake County, Tenn., and Memphis, Tenn., is naturally divided into three basins by their physical characteristics, based on the natural drainage which reaches the Mississippi River from the adjacent hills.

5. The upper basin, extending from Tiptonville to the mouth of the Obion River, a distance of 50 miles by river, averages about 8 miles in width and embraces a total area, including towheads and sand bars, of 220.030 acres. A levee extending from Tiptonville to the mouth of the Obion River, located in such manner as to be reasonably safe from bank erosion, would leave unprotected between such levee and the river an area of 27,029 acres, and the area between the levee and the hills which would be fully protected by a levee amounts to 84,757 acres. As the lower end of this basin must necessarily be left open for purposes of drainage and as an outlet to the Obion River, a considerable area would necessarily be flooded by backwater.

6. The backwater from a flood like that of 1912 would cover 108,244 acres. The area lying between the levee and the hills that would be wholly or partially protected amounts to 193,001 acres, the assessed value of which is about $2,888,000.

7. A levee along this front would be about 38½ miles in length and contain 3,363,173 cubic yards of earth, and the estimated cost, at 25 cents per cubic yard, would be $840,793.

8. In considering the value of the flood protection it should be noted that in the protected area described 121,738 acres is wooded, and 48,185 acres cleared, at the present time. It is probable that with the necessary protection a considerable portion of the wooded area might readily be converted into cultivated land. The wooded area, as such, would hardly justify the necessary cost of protection from floods, inasmuch as the timber is not damaged by overflows.

9. The cleared area alone has an assessed value of about $1,656,122, and as the real value materially exceeds this sum the interests involved seem sufficiently large to justify the expenditure of the amount necessary to provide levee protection.

10. The second basin extends from the mouth of the Obion River to the mouth of Cold Creek, a distance of 37 miles by river, with an average width of about 7 miles, the total area being 102,436 acres.

11. A practicable levee line would extend from the hills south of the Obion River westward to near the Mississippi River, and then southward to the mouth of Cold Creek. The levee would be about 40 miles in length and require 4,740,615 cubic yards of earth, at an estimated cost of $1,185,153.

12. The area of land lying between the levee and the hills is 83,259 acres, of which 13,223 acres is cleared, and the balance, 70,036 acres, is either wooded or swamp lands. The total assessed value of this area is about $654,726.

13. The backwater from a flood equal to that of 1912 would cover nearly the entire area, as the lower end of the basin must be left open to care for the drainage of Cold Creek and other streams coming in from the adjacent hills. A tract of about 2,500 acres at the extreme upper end of the basin might be fully protected by the levee proposed.

14. The area between the levee and the river left unprotected amounts to 19,177 acres.

15. In this case it will be seen that the cost of the protecting levee is well in excess of the total market value of the land, and at best can only give partial protection thereto. Considered from the point of betterment, therefore, the expenditure needed to give the practicable partial protection does not seem to be warranted.

16. The third basin extends from Chickasaw Bluff No. 2 to Memphis, Tenn., a distance of 53 miles by river, and has an average width of about 1½ miles. The total area is 51,232 acres, the assessed value of which is about $450,000; 9,077 acres have been cleared for cultivation, and the remaining area, 42,155 acres, is wooded or swamp land.

17. The small area in this basin and the great length of levee that would be required to protect it thoroughly indicates that the expenditure of money necessary for flood protection would not be justified.

BRUNSWICK, WARREN COUNTY, MISS. (574 L), TO BATON ROUGE, LA. (834 L).

18. The lower end of the controlling levee system along the river front of the Yazoo Basin terminates at Brunswick, with an extension southeastward along the banks of Eagle Lake. The unprotected front between Brunswick and Vicksburg permits a large area in the lower Yazoo Basin to be flooded by backwater when the stage of the river at Vicksburg exceeds 48 feet on the gauge.

19. The area subject to overflow by backwater is 679,315 acres, of which 142,104 acres is cleared land and 537,211 acres timber or swamp land. The assessed value of this land is $2,306,246.

20. Complete protection from overflow of this area is impracticable, owing to the fact that provision must be made for the outflow of the waters of the Yazoo River and its several tributaries. So while the extension of the levee line down to the mouth of the Yazoo River at Vicksburg would serve to reduce the area covered by backwater under present conditions and prevent direct overflow from the Mississippi River, it would only give partial flood protection.

21. A levee for this purpose would be about 25 miles long and require 3,562,720 cubic yards of earth, at an estimated cost of $980,000. The estimated benefits from such construction, in the increased value of protected land fully justifies the construction of such levee.

22. This work should be undertaken as early as practicable, as it is really an extension of the controlling levee line along the Yazoo front.

23. A considerable extent of the area described is flooded from the backwater flowing up the Yazoo to the several tributaries in the lower end of the Yazoo Basin. The extent of the overflow from backwater could be materially reduced by levees constructed along these streams to prevent the backwater from flowing over their banks. The cost, however, of such further protection, is much larger than the benefits to be derived, and the work is therefore not justified under present conditions.

24. In November, 1894, the commission defined the overflowed lands along the east bank of the river from Vicksburg to Baton Rouge by the name of the Homochitto levee district, and a tentative allotment of $30,000 for levee work therein was made to supplement the local levees already in existence.

25. In 1894–95 careful surveys were made and it was found that in most of the basins embraced in the district flood protection without large expenditures to care for the hill drainage would be impracticable, as the basins, if not fully closed, would be flooded by backwater.

26. For this reason, and the failure of interested owners to contribute to their own protection, the allotment was withdrawn, as it was thought that the Government should not assume the whole burden of protection.

27. A resurvey was made in 1910 of two of the basins—Rodney to Coles Creek and Fort Adams to Tunica—and the entire district was again reviewed in 1912, as required by the recent act of Congress quoted.

28. This district, as in the case of the upper reach, previously described, is divided into several basins by the approach of the bluffs to the river at intervals and by important channels of hill drainage emptying into the river.

29. The upper basin, extending from Vicksburg to Grand Gulf, a distance by river of about 36 miles, has an area of 20,954 acres, of which 2,930 acres is cleared and 18,024 acres is wooded or swamp land. The total assessed value of the land in this basin is estimated at about $56,000.

30. A portion of this basin could be protected by a levee starting from the hills and after following along as near the river as practicable returning again to the hills just north of where the Big Black River enters the lowlands.

31. This levee would be about 19 miles long and would completely protect the area included from river overflow, but would impound the drainage, which would be largely absorbed by the swamp without encroaching greatly on the tillable land. It would require 1,922,425 cubic yards of earthwork, the estimated cost being $419,448.

32. The drainage could be further facilitated at suitable stages of the river by the proper use of siphons and sluice gates.

33. At high stages of river the use of pumping plant would be necessary.

34. The estimated cost for an adequate drainage plant for all conditions is about $25,000.

35. The area thus protected would cover 2,180 acres of cleared land and 10,551 acres of wooded land, of which about 2,377 acres could be cleared for cultivation.

36. The assessed value of the proposed protected area is $41,500. Even the real value of such protected area is far below the estimated cost of an adequate levee, and this basin therefore can not be regarded as worthy of protection from floods.

37. From Grand Gulf to Rodney, a distance by river of about 16 miles, is a strip of overflow land averaging about 1½ miles in width.

38. Bayou Pierre, with its hill drainage, divides this reach into two parts.

39. The total area is 14,500 acres, of which 2,163 acres is cleared and 12,337 acres wooded or swamp land.

40. The total assessed value of this tract is $16,325.

41. The length of levee required for its protection is about 19 miles, and its cost would be so great as to far exceed the value of the land protected, and its construction is therefore not justified by the benefits secured.

42. From Rodney to Coles Creek, a distance of about 20 miles by river, is a basin which is more favorably situated for flood protection by means of a levee.

43. It has an area of 16,648 acres, of which 4,294 acres is cleared and 12,345 acres is wooded or swamp land.

44. The land that can be protected from overflow by means of a levee has a total area of 14,021 acres, having an assessed value of $57,900.

45. There are 4,294 acres of cleared land and 1,245 acres of wooded land that could be added to the cultivated area, leaving 8,482 acres of wooded land.

46. The protection of the basin would require a levee about 19¼ miles long, involving 1,736,700 cubic yards of earthwork, at an estimated cost of $376,355. Several miles of private levee, affording partial protection, have been in existence for many years.

47. The proposed levee would begin and end at high ground, and provision for drainage would be necessary and would largely increase the area of arable land.

48. The property owners in this basin have expended a considerable sum for their own protection and more complete protection is worthy of consideration, but it is regarded as impracticable to protect the basin as a whole.

49. From Coles Creek to Natchez, a distance of 28 miles by river, the proximity of the hills and the hill drainage is such that no practicable plan for flood protection can well be applied. The whole area between the bluffs and the river measures about 13,048 acres, the assessed value of which is about $44,848.

50. There are small tracts of cultivated land occupying the higher ground, in some cases partially protected by small private levees.

51. From Natchez to Ellis Cliffs, a distance by river of 16 miles, is a compact basin with an area of 16,537 acres, of which 3,800 acres is cleared and 12,737 acres wooded, the total assessed value being $86,865.

52. A levee about 11 miles long would protect the major portion of this basin. It would require 218,566 cubic yards of earthwork, the estimated cost of which is $80,000.

53. The protection of this basin from floods is worthy of consideration.

54. Between Ellis Cliffs and Fort Adams, a distance of 39 miles by river, lies a basin whose protection from floods is greatly complicated by the presence of lakes, streams, and swamps.

55. It has a total area of 59,412 acres, including 9,781 acres of cleared and 49,631 acres of wooded land, the assessed value of which is $204,739.

56. The systematic protection of the basin as a whole is impracticable without including drainage work of large proportions.

57. It will be observed that there is a large amount of cleared land which is now being cultivated, although meagerly protected from floods by small private levees.

58. Owing to the extent of swamp lands the cultivated area could not be greatly extended by the construction of a levee along the river front.

59. The benefits to be derived from the construction of a levee are relatively small as compared with the cost, and the work can not be recommended.

60. Between Fort Adams and Tunica, a distance of about 17 miles by river, lies a basin having an area of 13,961 acres, of which 12,838 acres are cleared and 1,103 acres wooded, the assessed value of which is $56,822, not including Angola Plantation, which belongs to the State and for which $200,000 were paid.

61. A levee about 9 miles long would protect this basin from overflow and would require 1,041,150 cubic yards of earthwork at an estimated cost of $203,896.

62. It would protect from river overflow 10,960 acres.

63. It would be necessary to provide drainage pumps and sluice gates at the lower end of the basin at an estimated cost of $14,000.

64. The construction of a levee along the river front of this basin for purposes of flood protection is recommended.

65. Between Tunica and Bayou Sara, a distance of 27 miles by river, is a basin having an area of 33,143 acres, embracing 3,000 acres of cleared and 30,143 acres of wooded land, having an assessed value of $112,687.

66. A levee long the river front, about 28 miles long, would be required for protection from overflow. The drainage reaches the river at the lower extremity of the basin, where sluice gates and pumping plant would be required to care for the surface drainage, as backwater from river floods would cover practically the entire tract of the levee were left open for the outflow of drainage by gravity. About 32,000 acres would be protected by the levee named.

67. The cost of protection from floods would be much greater than the benefits to be realized, and levee construction for that purpose can not be recommended.

68. Between Bayou Sara and Baton Rogue, a distance of 35 miles by river, lies a long narrow basin, with a large drainage outlet at Port Hickey, where the bluffs reach the river bank.

69. The total area of this basin is 18,240 acres, with 1,920 acres of cleared and 16,320 acres of wooded land. A large proportion of this area is swamp land. The total assessed value is $31,682.

70. Owing to the great length, small area, and swampy character of this basin, flood protection by means of a levee, except for the town of Bayou Sara, can not be regarded as practicable.

71. The estimated cost of levee protection for the town of Bayou Sara is $27,000.

72. The basins lying along the east bank of the river between Bessie, Lake County, Tenn., and Memphis, Tenn., have a total area of 373,708 acres, the assessed value of which is about $4,408,590.

73. The levees suggested, which would cost $2,025,946, would wholly or partially protect from the floods of the Mississippi River an area of 276,260 acres, whose assessed value is $3,542,726, leaving an area wholly unprotected of 97,448 acres, with an assessed value of about $902,400.

74. The unprotected basins lying along the east bank of the river between Brunswick, Miss., and Baton Rogue, La., have a total area of about 885,758 acres, the assessed value of which is about $3,188,314.

75. The estimated cost of the levees suggested as practicable for wholly or partially protecting from the floods of the Mississippi River about 360,591 acres of the total area is $2,059,699, and the assessed value of this protected area is $1,218,438.

76. This leaves an unprotected area of 525,173 acres, with an assessed value of $1,725,227.

77. It is recognized that actual value may reach several times the assessed value; but in these deductions the assessed values have been used because they represent values recognized and understood by the property owners of the districts described, and also because actual values can only be determined by formal purchase or legal condemnation proceedings.

78. The cleared areas described herein are successfully cultivated under present conditions, except during years of excessive floods, and a limited amount of flood protection would add materially to their safety and even admit of some increase in the cultivated area without undertaking the reclamation of entire basins.

79. The question of protecting the smaller basins lying along the east bank of the river between Cairo and Baton Rogue has been considered by the commission for many years, as shown by the following extracts from the annual reports of previous years and also from the proceedings of the commission:

"[Annual Report of the Mississippi River Commission for 1894, pp. 2713–2715.]

"CONSEQUENTIAL INJURIES BY INCREASED OVERFLOW IN UNPROTECTED AREAS.

"The progressive extension of the levees upon the lower Mississippi has given rise to some questions of private rights to which the commission desires to call the attention of Congress.

"There are two classes of lands subject to overflow which will not receive protection from the levees so far built or projected by the commission. One of these consists of the comparatively small areas lying between the river and the high land east of it and bounded by the irregular contours of the river channel and bluffs.

"These begin immediately below Cairo on the Kentucky side and extend the entire distance to Memphis. Beginning again at Vicksburg they continue to Baton Rouge. The river front bordered by them is about 450 miles in length. For the purpose of levee protection they would necessarily constitute a large number of independent districts, each to be treated separately. Some of these are capable of entire protection by levees. Others are so small that they can be protected only by complete closure without drainage outlets. An area so inclosed could be surface drained only by pumping, of which the expense would probably be prohibitory in most, if not all, the situations presented. To leave drainage outlets at the foot of such small areas, as is done in the case of the large ones, would let in backwater at flood stages, which would cover them completely or in large part.

"The other class of unprotected areas includes the lands at the lower ends of the large alluvial basins, such as those immediately above the mouths of the Yazoo and Red Rivers. The lower ends of these basins are of necessity left open for the escape of surface drainage, and at flood stages the water backs up through those openings to a greater or less distance, according to the elevation of the river and slope of the land.

"The Legislature of Mississippi, by an act approved February 2, 1894, created a new levee district, named the Vicksburg levee district, extending from a point about 18 miles above Vicksburg to the Louisiana State line, a distance of about 240 miles by the river. The district is divided by the act into four subdivisions, some of which would have to be further subdivided in order to protect them from overflow by levees. Provision is made by the act for the incorporation of the commissioners of the district, but no power of taxation or other means of raising money is conferred upon them.

"It is said, and with probable truth, that it is impossible, in the present condition of the overflowed lands in the district, to collect any tax for their protection. An urgent appeal has been made to the commission by the board of commissioners of the levee district thus created to recommend an allotment of money from the appropriations made by Congress for the construction of levees in their district, with representations that the effect of the construction of levees elsewhere by the United States upon the recommendation of the commission has been to increase flood heights along the front of their districts, and so subject the lands embraced within it to greater overflow than formerly occurred. This application has been indorsed by a large number of Senators and Representatives in Congress, for whose wishes and opinions the commission entertains the highest regard and to which it is bound to accord great weight.

"The commission is also advised of the pendency of a suit in the Court of Claims by the owners of a plantation within said district claiming damages for injury by overflow, said in the petition to have been caused by levees constructed elsewhere by the United States under the recommendation of the commission and by the works of improvement begun and in progress at the mouth of Red River and head of the Atchafalaya. In the copy of the petition in said cause furnished to the commission by the Department of Justice it is alleged that the omission of the United States to construct levees along the front of the lands of the petitioners constituted an adoption of the bluff behind the lands for the purposes of a levee and an appropriation of the petitioners' land for public use.

"The object of the foregoing recital of facts is to present in a single view a situation which brings up some questions of difficulty and importance. It is not to be doubted that the immediate effect of the confinement of the flood discharge of the Mississippi by levees is to raise the high water plane. But this increased elevation increases the scouring power of the current and may reasonably be expected to result after a time in an enlargement of the river channel and some consequent lowering of the flood level beneath the heights immediately following complete closure. But to what extent such lowering will take place and when are questions not yet answered by experience and upon which opinions differ.

"The evidence is quite clear that the flood line in that part of the Mississippi lying below Red River has been raised by the progressive extension of the levees above, although not to a height proportional to the increased volume of discharge. The general effect above Red River is not so clearly defined, but it is probable that as far up as existing levees are effective to confine overflow they operate at present to increase the elevation reached by a flood of given volume, and will have that effect in increasing degree as the system approaches completion.

"It must be recognized that the result will be to inflict some and perhaps great hardships upon the owners of lands in the unprotected areas described. Just how great the increase of burden cast upon those lands from this cause will be can not now be foreseen. They have always been liable to overflow by the highest floods, and they have always escaped overflow in some years. It is probable that this will continue to be true in the future as in the past. There may be, however, some floods which, unconfined, would not overflow them, but which, confined, will overflow them, and the injury in such case would doubtless be of that immediate and proximate character which constitutes recognized ground of legal redress.

"But the subject is one with which the commission does not feel authorized to deal. In making recommendations for the expenditure of money in the construction of levees it has felt bound to make such application of it as would probably secure the largest aggregate of beneficial results. Some of the minor areas mentioned are large and valuable enough to warrant the expenditure of the money necessary to protect them by levees, while others are not. As to the former, the work is at present simply deferred to await the completion of other work which is considered more important. As to the latter, the construction of levees by the United States would seem to be an expenditure of money merely or mainly for the purpose of repairing a private wrong. This the commission regards as beyond its jurisdiction.

"When a case arises in which such injury has been done it will have to be ascertained upon whom the burden of its redress should fall. The injury will not be traceable to levees built by the United States any more than to those built by the States and local organizations. Neither can it be attributed to the levees on any particular or limited portion of the river. It will be a result of the system as a whole. Manifestly, the commission is not a suitable tribunal for the adjudication of such rights and equities. And to attempt to remedy such injuries by recommending the expenditure of money in the construction of levees which would not otherwise be built or worth the building, would be, in the opinion of the commission, an improper exercise of the powers conferred upon it by law.

"The subject has been thus fully presented in order that Congress, with the facts before it, may take such action in respect thereto as shall in its wisdom seem best, and with the request that it may receive the early attention which its importance merits.

"[Annual Report of the Mississippi River Commission for 1896, p. 3418.]

"Homochitto levee district, 594 to 833 miles below Cairo, left bank. This district comprises several small and detached basins on the left bank, from Vicksburg to Baton Rouge, in which no levees have ever yet been built except by private owners. Consideration was given in the last two reports of the commission to the questions arising from the demands of owners for damages to these lands, said to be caused by the increase of flood heights in consequence of the leveeing of the larger basins, and for the leveeing of these smaller basins by the General Government without any cooperation by the State authorities or private owners.

"Since the date of the last report complete surveys of the several minor basins comprising this levee district have been made. The general conclusion from these is that the frontage of these districts along the river is so short that the backwater of floods, entering through the opening left at the lower end for the local drainage of the basin and that coming from the hills, will reach to the inner foot of the levee and submerge nearly if not all of the inclosed land.

"Complete reclamation of these lands is, therefore, only practicable by treating them as polders and establishing an artificial drainage by pumps and floodgates. The surveys further show that the cost of the levees in most cases far exceeds the value of the lands. Their area is so small that it can hardly be contended that their leveeing is important to the improvement of the navigation of the river.

"The maps of these surveys, accompanied by the report of Capt. Derby, in charge of the district in which they are located, are found in Appendix 13, and will be read with interest.

"[Annual Report of the Mississippi River Commission for 1910, pp. 2937–2939.]

"FRAGMENTARY AREAS ON EAST BANK.

"The attention of Congress has been called in former reports, beginning as far back as 1894, to the situation of the narrow and irregular strip of land lying between the Mississippi River and the highlands east of it between Vicksburg and Baton Rouge, a distance of 234 miles by the river. Within these boundaries the alluvial lands are cut across by a number of small streams coming in from the hills, so as to form, in connection with the devious course of the river, detached areas difficult of protection by levees. The elevation of the general flood levels, which has resulted from the extension of the levee system in recent years, subjects those lands to deeper overflow than they were subject to formerly or would be subject to now if the levee system were not in existence. The people living in the larger of these overflowed areas have been clamoring for aid in the building of levees to protect their lands for 16 years past. But the commission has been unable to see its way to the recommendation of allotments for that purpose out of the appropriations, for the four reasons that the construction of levees along these fronts did not appear to have as important value here as elsewhere in improvement of the channel, and the expense of them was out of proportion to the value of the lands to be protected, and the inhabitants were unable to bear the share of the expenses which the commission required as a condition of Government aid elsewhere, and the funds appropriated from year to year were all necessary for other works of larger importance. Some of the landowners in these areas have brought suits for damages in the Court of Claims, which, though pending for many years, have as yet been unavailing. While it is not within the province of the commission to express any opinion as to the legal merits of these suits, it is apparent to anyone that there must be great difficulty in the way of adequate relief in that manner. The immediate cause of the injuries complained of is the increased elevations of the flood heights. That is the result of the general confinement of the flood discharge by the levee system as a whole. That system has been constructed in part by the United States, but in larger part by the various levee organizations along the river created by the laws of the States bordering it. The case is manifestly one for legislation rather than judicial treatment. Relief in some form ought in justice to come from Congress and the State legislature in cooperation. But such cooperation would be so difficult to attain that it is hardly worth the thought. Meanwhile the litigation drags its slow length along, the lives of the landowners are passing away, and hope deferred is making their hearts sick. The situation is pathetic and distressing in the highest degree. That these people should be condemned to perpetual inundation without possibility of relief or redress for the sake of an improvement from which their fellow citizens are enjoying great benefits is intolerable to any man's sense of justice.

"It appears to the commission that there are three possible ways of dealing with the problem. One is to assist the owners of the inundated lands by helping them to build levees where that method of protection is economically possible. Another is to compensate them in damages for the injuries which they have sustained. A third would be to buy the lands and devote them to forestry. There is more to be said in favor of the last of these suggestions than might appear at first blush. The lands are capable of growing many kinds of valuable timber. They could be made to produce much material for revetment and other works of improvement in the river. If the fields were abandoned to natural growth, the land would gradually be built up by deposit and they might become highly valuable for cultivation.

"Upon the whole the commission recommends that a special commission be appointed to investigate the subject with such directions as Congress shall deem suitable to the case.

" [Proceedings of Apr. 9, 1906, p. 1098, M. R. C. file 807/9.]

" EXTRACT FROM REPORT OF COMMITTEE ON LEVEES, WHICH REPORT WAS APPROVED BY THE COMMISSION.

" It is therefore the opinion of your committee that a levee is not now necessary for the improvement of navigation in this (Plum Point) reach, and furthermore that the cost of a levee would be out of proportion to the value of the land that would be protected thereby, particularly as the problem is complicated by the question of drainage which now flows out at the lower end of the tract.

" Furthermore, it is the opinion of your committee that the funds available should be applied to raising and enlarging the controlling levee system so as to secure needed protection for the larger basins before any considerable amount is diverted to the protection of the smaller basins.

" [Proceedings of Apr. 16, 1909, p. 1485, M. R. C. file 1364/4.]

" RESOLUTION OF COMMISSION RELATIVE TO REQUEST OF WARREN COUNTY LEVEE BOARD FOR COOPERATION IN LEVEE BUILDING.

" That while the Mississippi River Commission is in hearty accord with the people of the Warren County levee district in their decision to extend the controlling levee line, it is found that all of the funds at the disposal of the commission are urgently required for the continuance of work already begun and for the preservation of work that is threatened at various points on the river, and the aid solicited can not therefore be given."

80. It will be seen from the statements quoted that the policy of the commission throughout has been to devote the available funds to the controlling levee line with a view to carrying this line up to a safe standard before diverting any of the funds to the protection of the smaller basins. In the larger

basins, such as the St. Francis, Yazoo, and others, protected by what may be termed the controlling levee line, a break in any portion of the levee results in very much greater damage than could possibly occur in the smaller basins, where the overflow would be largely local. A break in the upper part of the St. Francis Basin might result in flooding its entire 7,000 square miles.

81. The drainage of the larger basins invariably leads away from the river toward the hills, the outlet being at the lower end of the basin. In case of the smaller basins, the drainage from the hills crosses the overflowed lands at frequent intervals, and makes it difficult and in some cases impracticable to protect the lands by means of levees.

82. The commission is therefore of the opinion that all available funds for levee work should be applied to enlarging and strengthening the controlling levee line until a safe standard has been reached. When this has been accomplished it will doubtless be well to undertake the protection of such basins as are sufficiently valuable to warrant the cost of protection, assuming that the Government will cooperate with the property owners in the work required, as is now done in the case of the larger basins.

83. The disposition of the long, narrow basins which are not worthy of protection is a matter that requires careful consideration. The wooded areas therein do not suffer materially from the overflows that occur. Whether the land should be purchased for the use of the United States or the owners compensated for the damage done by increased flood heights due to levee construction complained of, is a complicated problem, owing to the participation of the States in levee construction, which has contributed much more to the change in flood heights than the work done by the United States.

84. The land embraced in these basins is in places covered with willow and material that would be valuable for use in the work of river improvement, and in such cases it is desirable that the ownership should be in the United States. In fact, the earlier reports of the commission recommended that such lands be acquired for that purpose. This becomes more and more important as the demand for material increases, and is further emphasized by the fact that a disposition is shown to secure possession of these lands by private owners in order to compel the Government to pay largely increased prices for the material needed.

85. In view of recent sales of lands in the basins, and prices that have been quoted from time to time, it is the opinion of the commission that an estimated value of $10 per acre may be regarded as the average price at which the lands whose protection is impracticable can be acquired. The total cost of such acquisition on that basis would amount to $6,226,210.

86. The locations of the basins and the levees suggested for flood protection are shown on the published alluvial valley map submitted herewith. Maps on larger scale prepared from the detail surveys are on file in the office of the commission.

C. McD. TOWNSEND,
Colonel, Corps of Engineers,
President Mississippi River Commission.
R. S. TAYLOR.
J. A. OCKERSON.
HOMER P. RITTER,
Assistant, United States Coast and Geodetic Survey.
WM. T. ROSSELL,
Colonel, Corps of Engineers.
J. G. WARREN,
Colonel, Corps of Engineers.
C. H. WEST.

[Second indorsement.]

THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
Washington, November 11, 1912.

To the Chief of Engineers, United States Army, concurring in the views and recommendations of the Mississippi River Commission.

For the board.

WM. T. ROSSELL,
Colonel, Corps of Engineers,
Senior Member of the Board.

Gen. Scott. The commission says:

> The case is manifestly one for legislative rather than judicial treatment. Relief in some form should come to these landowners from Congress. The lives of the landowners are passing away and hope deferred is making their hearts sick. The situation is pathetic and distressing in the highest degree. That these people should be condemned to perpetual inundation without possibility of relief or redress for the sake of an improvement from which their fellow citizens are enjoying great benefits is intolerable to any man of sense of justice.

Gen. Scott. Now, Mr. Chairman and gentlemen of the committee, for 12 years I was assistant in the office of the Attorney General and I had charge of defending all cases for a period of years against the Government growing out of river and harbor improvements. not only in the Court of Claims but in the Supreme Court, and the cases in the district and, at that time, the circuit courts, and I want to say to you that the situation along the Mississippi River is even worse than the situation on the Monongahela and in my home State, where they are rendering judgments practically every year for the destruction of land as the result of river improvement, and on the Kentucky River and the Greene River and the Rough River in the State of Kentucky, and the White River in the State of Arkansas, and there is no doubt in my mind—and we always so looked at it in defending—that it was the large amounts involved that caused the courts to fear these cases.

The first demurrer in the Jackson case was overruled, and Chief Justice Nott said, and he was on the bench over 40 years and is recognized as one of the best informed judges who ever sat on that bench—he said that the facts stated in the Jackson petition make a better case against the Government than the facts found in the Pumpelly case or the Lynah case. Take the Lynah case, that is on the Savannah River, and the destruction of the Lynah land was caused by narrowing the Savannah River up to the city of Savannah and beyond in order to give an increased depth there from 8 to 28 feet, and the Lynah land was 8 miles away from any work. It is exactly the same on the Mississippi. If you will draw a map of the Savannah River and the Mississippi River and put one alongside the other, and the dikes and the jetties, which are levees—the jetties are nothing more or less than levees extending slantwise out into the river—then take your Mississippi River and place thereon the levees paralleling the stream, and you will have exactly the same situation. There has been probably $100,000 paid on the Savannah River, as the result of destroying the land. Cases are pending there to-day.

The Chairman. Was suit brought in the State courts?

Gen. Scott. No, sir; the bulk of those suits were brought in the district courts in South Carolina—suits in regard to the Savannah River. Two of them have gone to the Supreme Court. That is, the Lynah case and the Williams case.

Senator Kenyon. Were the cases commenced in the State courts?

Gen. Scott. No, sir; you can not sue the Government of the United States in the State courts.

Senator Kenyon. Are these suits against the United States Government?

Gen. Scott. Yes, sir; all of them.

The **Chairman**. Are they pending now in the Supreme Court?

Gen. **Scott**. No, sir; they have been decided. The Lynah case will be found in 188 United States, page 445. The Williams case follows it.

The **Chairman**. Has Congress ever taken any action on this matter at all, either House?

Senator **Vardaman**. It has not.

Gen. **Scott**. No, sir; but the river and harbor bill of 1914, which was defeated in the Senate, as you will remember, carried with it a provision in section 13 providing for a commission to investigate and report not later than July 1, 1916. That provision creating the commission, however, would have done no more than the provision in the river and harbor bill of 1912, of which this is the report.

Now, in the House there was a bill introduced in 1914 and a favorable report made by the House committee on that bill, and inasmuch as that will give a very complete statement of the facts I think it would be well to let that go in the record rather than to have me read it.

The **Chairman**. That may be included as a part of your remarks.

(The document referred to is here printed in full, as follows:)

[House Report No. 309, Sixty-third Congress, second session.]

Relief of Certain Landowners on the East Bank of the Mississippi River.

Mr. Stephens of Mississippi, from the Committee on Claims, submitted the following report [to accompany H. R. 13581]:

The Committee on Claims, to whom was referred the bill (H. R. 13581) for the relief of the landowners on the east bank of the Mississippi River in the counties of Warren, Claiborne, Jefferson, Adams, and Wilkinson, in the State of Mississippi, and in the parish of West Feliciana, State of Louisiana, having considered the same, report thereon with a recommendation that it do pass.

The bill under consideration carries no appropriation, but as recommended by the river commission and officers of the War Department refers the claims of the landowners in these counties to a court for adjudication.

The relief sought by this bill is the legislation prayed for by joint resolution No. 14, which passed the Legislature of the State of Mississippi and was approved by Gov. Noel on February 15, 1910 (see Laws of Mississippi, 1910, p. 109, ch. 363), and by another joint resolution which passed the legislature of that State by a unanimous vote last June. Both of these resolutions memoralized Congress, and especially the Representatives in Congress from Mississippi, to enact legislation similar to that set out in the bill under consideration.

In the first session of the Sixty-first Congress a similar bill (H. R. 6467) was referred to this committee, and by the committee referred to the War Department, and by that department to the Mississippi River Commission for report. That commission, on April 1, 1910, in returning said bill to the War Department, reported as follows:

"There is no doubt that the lands and other property referred to in the bill have been more or less demaged by the construction of the levees along the lower Mississippi River which have been built in recent years under the direction of the Mississippi River Commission. * * * At the same time the United States has been benefited by the general improvement of the river for navigation"—and after further stating the facts as to the damage to the east-bank lands in these counties, on the question of the relief provided in said bill for the landowners, said:

"It would be desirable to have some court or special commission do this, if possible, as a matter of justice to everybody; and if such court is to act at all, it seems just and equitable that it should consider the cases of all landowners affected, without reference to any time limitation."

The recommendation made by the Mississippi River Commission to the Chief of Engineers, and by the Chief of Engineers to the Secretary of War, as above referred to, is in all respects similar to the recommendations made by the

River Commission in its annual reports, whenever reporting on the subject of the damage done to these lands. Particular attention is called to the commission's report for 1910, pages 2937–2939, and to House Document 1010, Sixty-second Congress, third session, and especially to paragraph 84, page 12, where it is stated that it was desirable that the title to these east-bank lands should be in the Government, and that the early reports of the commission recommended that said lands be purchased by the Government for use in its work for river improvement. Said House Document 1010 is a report made by the Mississippi River Commission in accordance with a provision of the river and harbor act approved July 25, 1912, which appropriated $30,000 for the purpose of investigating the claims of these landowners and to survey said lands.

The relief provided for in this bill is in all respects similar to the relief granted to the citizens along the Fox and Wisconsin Rivers by the act of March 3, 1875 (18 St. L., pt. 3, p. 506, chap. 166, and 25 St. L., p. 24).

Prior to the construction of the levee system along the Mississippi River, which commenced a few years after the Mississippi River Commission was created in 1879, the high waters of the river spread out in a thin sheet over a territory from Cairo to Vicksburg, 25 to 70 miles wide. The narrowest place being at Helena, Ark., where it was approximately 25 miles wide—that is, from the foothills in Arkansas on the west to the foothills in Mississippi on the east—but at Arkansas City the high waters spread over a territory 70 miles wide.

At Vicksburg the high waters spread in a thin sheet over the territory between the foothills south of Vicksburg, on the east, to the Ouachita River, on the west; that is, over a territory 70 miles in width. From Vicksburg south the territory over which the high waters flowed narrowewd and at Natchez had a width of approximamtely 30 miles; that is, from the foothills in Mississippi, on the east, to Harrisonburg on the Boeuf River, on the west. From Natchez to Baton Rouge the high waters flowed over a territory approximately 40 miles wide; that is, the foothills in Mississippi continued as the eastern boundary, and the high waters spread out in a thin sheet over all the land extending from said foothills west into Louisiana as far as Catahoula at the north and to Bayou Cocodrie and Bayou Teche just east of Opelouses, and was approximately 40 miles wide. From Baton Rogue south to the Gulf of Mexico the high waters flowed over a territory approximately 40 miles wide, the bulk of said territory being south and west of the main channel of the river. From the above it will be seen that prior to the construction of the levee system by the Government the high waters of the river spread out in a thin sheet over territory from 25 to 70 miles wide, or over a territory having an average width of about 40 miles.

The map of the alluvial valley of the Mississippi River from Cairo to the Gulf of Mexico, published by the Mississippi River Commission in 1887, and republished in 1907, showing the levees constructed along both sides of the river from Cairo to the Head of the Passes, shows that the construction of the levee system by the Government obstructs the flow of the high waters on both sides of the river north of Vicksburg and confines all of said waters to the space between the line of levees on the east and the line of levees on the west, and which space does not have an average width of more than 3 miles and does not at any point have a width of more than 10 miles, and this widest place is only for a short distance.

From Delta Point, opposite Vicksburg, to West Baton Rouge the flow of the high waters is obstructed by that part of the levee system on the west side of the river, and they are now compelled to flow over the space between that part of the levee system west of the river and the foothills east of the river in Mississippi, and which space does not have an average width of over 3 miles. This stretch of territory on the east side of the river from Vicksburg to Baton Rouge is very irregular in its width, for the foothills at several places abut on the river, as at Vicksburg, Grand Gulf, Rodney, Natchez, Ellis Cliff, Fort Adams, Tunica, and Bayou Sara or St. Francisville, making six small **V** or **U** shaped basins.

From Baton Rouge south, instead of flowing over a territory 60 or 70 miles wide to the Gulf as formerly, the high waters of the river are now compelled to flow over the space between that part of the levee system constructed east and north of the river and that part of the said levee system constructed west and south of the river, which does not have a width of more than 2 or 3 miles at any point, and in this way the free flow of the high waters in their course to the Gulf is obstructed on both sides of the river. The Mississippi River Commission has established a grade and height for levee construction along the river which is from 3 to 5 feet above the highest known water, and the levee system as now constructed is, in the opinion of Col. Townsend, president of the Mississippi River Commission, sufficient to withstand all ordinary high waters. (P. 96, Hearings on H. R. 1749, before House Committee on Rivers and Harbors, Dec. 3 and 4, 1913.)

In addition to these obstructions to the free flow of high waters of the river south of Vicksburg, the high waters are brought from Cairo, south, diverted from their natural course, and confined between two lines of levees, as before stated, to the mouth of the Yazoo River, over a territory only about one-twelfth as wide as that over which the high waters flowed before levee construction, and at Brunswick, just north of the mouth of the Yazoo River, these diverted and confined waters are turned loose in volume much greater and with a current more forceful and destructive than before levee construction on the land in these counties lying between the foothills east of the river and the line of levees west of the river, with the result that said lands on the east bank of the river between the foothills and the main channel of the river, from Vicksburg to Baton Rouge, have been destroyed and the landowners driven from their homes, their houses, cabins, and other improvements washed from their foundations and destroyed, and their land in some instances covered with sand and gravel to a depth of from 6 inches to 10 feet, and in other instances the waves and currents of the high waters have washed gullies in their lands to a depth of from 3 to 15 feet, thereby destroying said lands for all agricultural purposes.

From what has been hereinbefore stated relative to the construction of the levee system on both sides of the river, from Cairo to the Head of the Passes, it is seen that the space over which the high waters are now compelled to flow is much narrower than that over which said waters formerly flowed in their natural course to the Gulf. The river is practically leveed on the west side the entire distance, from Cape Girardeau, Mo. (a little northwest of Cairo), to the Head of the Passes, a distance of 1,050 miles by the river. By air line, however, this distance is less than 500 miles. On the east side the river is practically leveed the entire distance, from Cairo to the Head of the Passes, with the exception of a few places of short length, where the foothills abut on the river, and in this section of the river on the east side where it is not leveed the Government has connected the levee system with the foothills, thereby making one continuous line on the east side. As a result of the construction of the levee system it requires very much less water to flow the lands in these counties located on the east bank between the foothills and the river than formerly.

The Mississippi River Commission, in its report for 1910, at pages 2937–2939, says that these lands are now flooded when they otherwise would not be were it not for the levee system.

Shortly after the Government inaugurated the levee system and commenced the work of connecting up the levees on both sides of the river, it became known to the engineer officers of the Government that the construction of said levee system would result in the elevation of the high-water level of the river, and that said levee system would cause the east bank lands in these counties to be overflowed when they otherwise would not be if there were no levee system. The effect of the raising of the high-water level, and the more frequent overflow of these lands was felt by the landowners, and at the time made known to the officers of the Mississippi River Commission, who reported it to Congress.

First. In the river commission's annual report for 1894, at pages 2713 and 2715. In this report of 1894 the river commission states very fully the injury done the east bank lands, and gives as a reason therefor the following:

"The subject has been thus fully presented in order that Congress, with the facts before it, may take such action in respect thereto as shall in its wisdom seem best, and with the request that it may receive that early attention which its importance merits."

Second. In its annual report for 1895, at page 3644, that commission renews the views expressed in the 1894 report and "renews the recommendation there made that some provision be made by Congress for the adjustment of the equitable claims in such cases."

Third. In its annual report for 1896, at page 3418, reference is made to what was said on this subject in the commission's two previous reports, and at pages 3472–3474 is set out a report giving the result of a survey of the lands in these counties by Capt. Derby, of the Corps of Engineers of the United States Army, and it is there stated that it would cost more to construct levees along this section of the river than the value of the comparatively small acreage of land in the various basins between the foothills and the river. Following page 3758 of the commission's report for 1896 are plates or maps, 1 to 6, inclusive, showing the survey made at that time by Capt. Derby.

Capt. Derby estimated the cost of levee construction at from 10 to 20 cents per cubic yard, on pages 3475–3476 of said report, while the Mississippi River Commission's Report for 1913, at pages 3547–3548, shows the cost of levee construction along the river per cubic yard for that year was practically double the estimate made by Capt. Derby in 1895, which would double the cost of levee construction as stated in Capt. Derby's report at page 3473, and which also gives the number of acres involved in each of these counties together with the value of said land as ascertained by him. For this reason the commission has deemed it more economical to connect the levee system with the foothills and use said foothills as a levee than to connect up the levee system on the east side of the river by the construction of levees as was done on the opposite side of the river. Reference to and a restatement of such facts was made by the commission in its annual report for 1899, at bottom of page 3325.

The river commission for the fourth time, in its annual report for 1910, at pages 2937–2939, calls the attention of Congress to the destruction of the east-bank lands in these counties as a result of the construction of the levee system, and in very strong language states the facts and makes recommendations for the relief of the owners thereof. Practically all the river commission has said in its annual reports, hereinbefore mentioned, relative to the destruction of the east-bank lands in these counties, as a result of the construction of the levee system, is restated in House Document No. 1010, Sixty-second Congress, third session, a report made by that commission, after investigating the claims of the east-bank landowners, the destruction of said lands as a result of the construction of the levee system, and a survey of said land as required by a provision of the river and harbor act approved July 25, 1912, appropriating $30,000 for such investigation and survey of said lands.

The river commission's report for 1910 states that the east-bank lands in these counties are "permanently inundated" as a result of the construction of the levee system to improve the river for navigation, and this last report, set out in House Document No. 1010, on page 12, paragraph 84, states:

"The land embraced in these basins is in places covered with willow, a material that would be valuable for use in the work of river improvement, and in such cases it is desirable that the ownership should be in the United States. In fact, the earlier reports of the commission recommend that such lands be acquired for that purpose."

The annual reports of the Mississippi River Commission informed the Congress of the commission's plan of river improvements by the inauguration and construction of the levee system, and practically all of the acts of Congress making appropriations for the improvement of the Mississippi River from Cairo to the Head of Passes approved the river commission's plan of improvement, and provided that the appropriations for the improvement of the river for navigation from Cairo to the Head of Passes should be in accordance with the plans of the river commission which had been reported to Congress.

The improvement of the Mississippi River is a national question for the reason that the Congress has so recognized it, and the continued and permanent improving of the river was specially approved and indorsed in the national platforms of the three principal parties having candidates in the field in the last presidential election, that of 1912.

That this subject is a national question is also shown by the fact that the drainage basin of the Mississippi River extends from the Allegheny to the Rocky Mountains and from Winnipeg and the St. Lawrence watersheds to the Gulf of Mexico. The area of this basin is 1,240,050 square miles, or about 41 per cent of the entire area of the United States, exclusive of Alaska and outlying possessions. That this is also a national question is further shown by the fact that the accumulated waters which the Government's levee system brings down the improved channel of the river and turns loose and diverts upon the lands of the east-bank citizens of these counties comes from 31 States of the Union, which makes the Mississippi River confined within the Government's levee system the drainage ditch of said 31 States, comprising, as heretofore stated, almost half of the territory of continental United States.

It is a fact, admitted in reports by the officers and agents of the United States charged by acts of Congress with the construction of the Government's levee system, that the confinement and diverting of the waters from these 31 States has resulted in the destruction of the east-bank lands in these counties, and has driven the landowners from their homes and caused the abandonment of said lands for cultivation and said lands before the inauguration and construction of the levee system by the Government had been successfully and profitably cultivated by the owners thereof for generations, i. e., ever since the settlement of the State of Mississippi along that section of the river, and the city of Natchez (Fort Rosalie), in Adams County, is one of the oldest settlements in the State.

The east-bank lands in these counties were, before the construction of the Government's levee system, in their natural location much higher than the lands along and on the west side of the river in the State of Louisiana and of considerable value, while the lands in the State of Louisiana on the west side of the river were not so valuable as agricultural lands, and since the inauguration and construction of the Government's levee system, the lands protected by and behind the levee system have become much more valuable and are to-day being successfully and profitably cultivated and are valuable sugar and cotton plantations, while the east-bank lands in these counties have been destroyed and abandoned and have no agricultural value.

For the last several years the acts of Congress making appropriations for the improvement of the river each year provided for the construction of levees forming the levee system in accordance with the plans of the river commission, which was to construct a connected and continuous levee system, the first act of Congress providing for the construction of levees being that of September 19, 1890. Later acts of Congress, however, made appropriations not only for the construction of levees and to improve and give safety and ease to the navigation of the river, but also provided for the improvement of the river in accordance with the plans of the Mississippi River Commission as approved by the Secretary of War, to prevent destructive floods and promote and facilitate trade, commerce, and the Postal Service (see river commission's report, 1905, p. 8). Notwithstanding the fact that the Congress made appropriations to improve the river and to "prevent destructive floods" the work done in accordance with the plans of the river commission to improve the river caused the east-bank lands in these counties to be subject to "destructive floods," and as foretold by the river commission in its annual reports.

The flood of 1912, the bulk of which came from north of Cairo, Ill., being confined between the levees on both sides of the river composing the levee system, was too large to be contained within this limited space and overtopped the levees in places, causing great damage and suffering to the landowners and their tenants behind and protected by said levees and owning and living on land which the construction of the levee system had made very valuable. The Congress came to the relief of these flood sufferers of 1912 and appropriated $1,500,000 to care for and protect them and their property. Not one foot of land in these counties along this section of the river on the east bank has in any way been benefited by the construction of the levee system, but, on the other hand, has been destroyed. The appropriation of $1,500,000 for the relief of the flood sufferers of 1012 was not for the benefit of those east-bank citizens, but was for the benefit and relief of citizens owning and living on land behind the levees. Maj. Normoyle, of the United States Army, in his report of the disbursement of this relief fund appropriated by Congress refers to these east-bank lands as "abandoned lands." Maj. Normoyle's report is published as House Document 1453, Sixty-second Congress, third session, and the map accompanying it shows the overflowed territory in the locality of the east-bank lands in which he operated for the relief of the 1912 flood sufferers to be west of the river and behind the levees on that side of the river, and this notwithstanding the fact that all east-bank lands west of the foothills were overflowed. The reason for this is easily explained. The landowners and the tenants of the east-bank lands had been theretofore driven from their lands and homes, and said lands abandoned by them as a result of the construction of the levee system.

Another view of this matter and the change effected by the construction of the levee system can be obtained by referring to the fact that before the construction of the levee system the high waters of the river periodically flowed over 29,790 square miles and had a free flow from Cairo without continuous obstruction on either side of the river to the Guf of Mexico. Since the construction of the levee system 26,569 square miles are protected by the levees composing said levee system. In other words, before the construction of the levee system the high waters flowed over 29,790 square miles of territory, and since the construction of said levee system the high waters are obstructed and compelled to flow over a territory of only 3,221 square miles, showing that the high waters are now compelled to flow over a territory approximately one-tenth as large as that over which it flowed before being obstructed and diverted by levee construction. Instead of flowing as formerly over this large territory in a thin sheet, the high waters are now compelled to flow over a smaller territory in a much thicker sheet, or to a greater depth, and, the space being only one-tenth as large, the lands lying adjacent to the river where no levees have been constructed are flooded much more frequently than before levee construction, for the reason that it requires less water to flow them, and the construction of levees on both sides of the river north of their lands and on the west side of the river in front of their lands brings more water down the main channel than flowed there formerly.

In order to secure relief at the hands of Congress numerous citizens in these counties owning east-bank lands organized the "Association for relief to riparian owners of eastern bank of Mississippi River," of which J. D. Frazier, of Rodney, is president, John F. Jenkins, of Natchez, Miss., secretary, and A. B. Learned, of Natchez, Miss., treasurer. The executive committee of said association consists of two members from each of the five counties and is as follows: Dr. C. S. Highland and H. C. McCabe for the county of Warren, R. L. Hamilton and J. C. McMartin for the county of Claiborne, Hon. Jeff Truly, a former president of the supreme court of the State of Mississippi, and J. D. Frazier for the county of Jefferson, A. B. Learned and J. S. Chambliss for the county of Adams, and John F. Jenkins and C. Striker for the county of Wilkinson. Said association prepared a "memorial and petition to the President and Congress of the United States," which was presented to Congress on the 11th day of January, 1912, and published at page 893 of the Congressional Record for that day.

As far back as 1894 the Mississippi River Commission in its annual reports for that year reported to Congress the damage done to the east-bank lands in these counties by the then partial construction of the levee system, and also informed Congress that "it is not to be doubted that an immediate effect of the confinement of the flood discharge of the Mississippi River by levees is to raise the high-water plane" and that it "will have the effect in increasing degree as the system approaches completion," and in the same report further stated that "it must be recognized that the result will be to inflict some, and perhaps great, hardships upon the owners of lands in the unprotected areas described," that is, on the east bank in these counties, and said commission in the same report for 1894, after submitting the facts fully to Congress made "request that it may receive the early attention which its importance merits" at the hands of Congress, all of which is set out in the commission's report for that year, pages 2713–2715, and printed on page 9 of said House Document 1010, Sixty-second Congress, third session.

As stated by the Mississippi River Commission in its report for 1910, "the situation (of these east-bank citizens) is pathetic and distressing in the righest degree. That these people should be condemned to perpetual inundation without possibility of relief or redress for the sake of an improvement from which their fellow citizens are enjoying great benefits is intolerable to any man's sense of justice," and "the lives of the landowners are passing away, and hope deferred is making their hearts sick."

The Mississippi River Commission has recommended that the Government take title to said east-bank lands in these counties, and if the relief which these east-bank citizens seek is given to them by Congress, as set forth in said bill, the Government, under recent court decisions, becomes the riparian owner of the east-bank lands when the east-bank citizens are compensated for them. These east-bank citizens are not seeking a gratuity at the hands of Congress, but the Government will, when compensating said landowners for their property destroyed, receive in return the title to said lands and, in fact, has had the use of said lands for several years. The construction of the levee system, as said by Senator Williams on the floor of the Senate February 21, 1913, "virtually made their lands a part of the channel of the Mississippi River" and "virtually condemned for public purpose, without compensation, some of the fairest plantations which ever existed in that country."

The claims of the landowners in these counties are those referred to by Senator Gallinger on the floor of the Senate January 16, 1914, when he said: "I am inclined to think those people have a pretty good claim." (Cong. Rec. for that day, p. 1859.)

The lands in these counties are the same lands referred to by Senator Chamberlain on the floor of the Senate January 22, 1914, when he said:

"Ruined, Mr. President, if you please, because Congress had appropriated money to improve the navigation of the Mississippi River, and these improvements resulted in changing the channel of the river and washing out the lands on the opposite side.

* * * * * * *

"I happen to know something about it. I was born in Mississippi. * * * I have walked along the levees, if you please, and seen that those levees have changed the channel of the Mississippi River and washed out the lands on the other side." (Cong. Rec. for that day, p. 2176.)

The United States Court of Claims was created and given certain general jurisdiction for the relief of citizens and "to afford assistance and relief to Congress and the executive departments in the investigation of claims and demands against the Government," and ever since it was created Congress has from time to time frequently given it additional jurisdiction in special cases to further relieve Congress or an executive department, and at the same time give relief to citizens who had grievances against the Government, and who under the first amendment to the Constitution are guaranteed the right to petition the Congress for he redress of their grievances.

Precedents for giving the Court of Claims additional jurisdiction in special cases are numerous.

Senator KENYON. Is the Jackson case in 221 United States Reports?

Gen. SCOTT. No, sir; the Jackson case is 230 United States, page 1. The Hughes case is in the same volume, page 30, I think.

Senator JONES. This matter you have just asked to put in the record will serve its purpose unless there are some things in there you want to consider in passing on this proposition.

Gen. SCOTT. That will give you a complete statement of these riparian owners' claims. That is a statement which will give you the citation to all Government documents, wherein the Mississippi River Commission has admitted the destruction of the land, the damage to the land and prophesied the eventual destruction, and recommended that some means of compensation be provided for these landowners.

If you will take the hearings which we had before, I spoke for an hour and a half on this subject, and that has all been printed.

Senator JONES. I had in mind that several of the members of the committee think we ought to act on this bill to-day and report.

The CHAIRMAN. You made reference to those hearings, did you?

Gen. SCOTT. Yes, sir.

Senator KENYON. Did Senator Williams introduce bills to recompense these people?

Gen. SCOTT. Senator Williams has introduced bills to provide for the relief of these people for the last 15 or 20 years.

Senator KENYON. We have them on the calendar, have we not?

Senator VARDAMAN. No, sir.

The CHAIRMAN. When we were considering the rivers and harbors bill the result was that provision regarding that commission.

Gen. SCOTT. In 1914 this matter was presented the first day, and at the second hearing it was suggested that the parties get together in Senator Shields's office and have a conference as to whether or not we would have a commission created to ascertain and assess the values or a court amendment. That conference was held in Senator Shields's office and was attended by representatives from all the States affected, and the conclusion reached and the recommendation made to the committee, or that was to be made to the committee, was that the court amendment be adopted.

Our people will be satisfied to go into the district courts in the several States. They do not contend for the Court of Claims. They would be satisfied with the provision that the Secretary of War shall take hold of the matter. All they want, gentlemen of the committee, is relief in some form or other which the commission says should come to them.

Senator JONES. Do you not think the States affected have so much interest in this general project and in carrying it out that they should take care of damages of that sort?

Gen. SCOTT. I do not, sir.

Senator JONES. Why not?

Gen. SCOTT. Simply because prior to 1883 the levees built along the Missisippi River were not connected up into one system. In other words, it was a chain with numerous links out which permitted the flood waters to pass out through the outlets that nature provided, and it is only the Government of the United States which has inaugurated this system, connected up this chain of levees, supplying the missing links and made the system complete.

Senator JONES. But has it not done it largely for the benefit of the overflowed lands in those various States?

Gen. SCOTT. The purpose of the bulk of the money spent by the Government was to improve the river for navigation, and without a continuous system of levees the river can not be successfully improved for navigation. A broken chain of levees will protect land from overflow. Now, the question was asked here yesterday whether or not the Mississippi River Commission has a plan of improving the lower Mississippi. It has. Prior to 1909 a special board of engineers was appointed, either by the Secretary of War or by resolution of Congress, which went over the subject very fully, very thoroughly, and outlined that plan of improvement. You will find that large document, No. 50, containing 400 or 500 pages.

Senator KENYON. Where is that? I have been trying to find it for several weeks.

Gen. SCOTT. That is given in this pamphlet, Document No. 50. I will supply that to Senator Kenyon, and also have the record show it.

Senator KENYON. I should like to have it.

Gen. SCOTT. That is the fullest treatment of this subject of improving the Mississippi River.

Senator KENYON. The money to be appropriated under this bill is to be expended in accordance with those plans that are contained in this document, you understand?

Gen. SCOTT. Yes, sir; that is the way I take the wording of the act.

Senator SHIELDS. If Gen. Scott is through, I move that the committee go into executive session.

Gen. SCOTT. I should also like to have the record show that part of the report as to levees made by Senator Nelson in 1898, and being a part of Senate Report No. 1433, Fifty-fifth Congress, third session.

(The document referred to is here printed in full, as follows:)

[Senate Report No. 1433, Fifty-fifth Congress, third session.]

FLOODS OF THE MISSISSIPPI RIVER.

Mr. Nelson, from the Committee on Commerce, submitted the following report (to accompany S. Res. No. 76):

The Committee on Commerce makes the following report of the action of the committee taken pursuant to the following resolution:

* * * * * * *

LEVEES.

The history of levee construction on the Mississippi River has been a history of the gradual reclamation of the several basins or bottoms from the inroads of the floods of the river. Anterior to levee construction these basins served as great natural reservoirs for the floods, the exterior hills or ridges of the basins serving as the high-water banks of the river, and within these banks so wide apart and with these basins for a high-water bed the floods never reached the high level nor the increased rapidity obtained since the great extension of the levee system. Levees are the penning up of the floods of the river from these high-water basins. The narrowing of the high-water stream by means of levees does not result in materially scouring a deeper channel nor in raising the bed of the river (testimony, 269), and so the stream at its flood stages, as it becomes narrower, also becomes higher. Contraction without deepening of necessity leads to elevation and, as a consequence, levee construction has brought in its wake higher flood levels, necessitating from time to time higher and stronger levees. The history of levee construction shows this. (Dabney, testimony, 311; Driver, testimony, 199; Starling, testimony, 269; Gillespie, testimony, 382, 383; Newcomer, testimony, 334; Richardson, testimony, 370, 371; Taylor, testimony, 237, 239, 241; Table, testimony, 432; Tollinger, testimony, 510.)

The first levee construction began in 1717, when a levee 1 mile long was constructed to protect New Orleans, then a mere village. This levee was 4 feet in height and 18 feet across at the top. The country settled up slowly and levee construction only kept pace with the settlement. Fifty years after this levee was built the settlements extended only 30 miles above and 20 miles below the embryo city. It was not until after Louisiana had been ceded to the United States that levee extension was undertaken on an enlarged and systematic scale. By 1828 the levees, though of rather inferior character, had been extended nearly up to the mouth of the Red River. At the beginning a levee 4 feet in height was ample, but as levee construction progressed up the river and additional basins and bottoms were inclosed and protected the levees were, of necessity, increased in height. (Testimony, 237.) There are still levees below New Orleans that are only from 3 to 4½ feet in height, but the average height of the levees in Louisiana, above New Orleans, is now from about 12 to 13 feet (testimony, 369, 380), and this height proved insufficient in the great flood of 1897 (testimony, 370).

The flood stage of 1897 above New Orleans was from 1½ to 3½ feet higher than that of any previous flood, notwithstanding that the flood level at Cairo was less than in 1882–83 and 1884. Three great crevasses occurred in 1897 that remained unrepaired until after the flood subsided, and several minor crevasses occurred, which were closed during the pendency of the flood. This increased flood level was "partly due to the improvement and increase of levees." (Testimony, 370, 371, 380, 423, 424.) The experience of 1897 indicates that a complete inclosure of all the river basins will require from 3 to 4 feet higher levees in Louisiana. The levees on the Yazoo Basin were only 4 feet high in 1858. From 1874 to 1882 they were raised to from 7 to 8 feet (testimony, 299–308), which proved insufficient under the flood of 1882, and based on this flood as a standard, the levees were increased to an average of from 13 to 14 feet in height prior to 1897. This was more than 3 feet above the high water of 1882 (testimony, 308–311), but it proved utterly insufficient under the flood of 1897.

Since the floods of 1882–83 and 1884 the White River Basin, the upper Tensas Basin, and much of the St. Francis Basin have been inclosed, and this, together with the higher levees on the Yazoo front, have greatly aggravated and raised the flood levels on this reach of the river. (Testimony, 269, 272, 273, 311.) The flood of 1897 made it plain that a complete inclosure of all the river basins would require an increase of from 4 to 6 feet in height of the Yazoo levees. (Testimony, 274–275, 311; see Starling's paper on levee construction in Yazoo Basin, testimony, 505–508.)

The work of inclosing the White River Basin was commenced in 1888 and most of it was done after 1890. By 1897 the basin had been inclosed by a levee of an average height of 12 feet, deemed sufficient under the flood levels of 1882–83 and 1884, but this proved utterly insufficient in the flood of 1897. That flood overtopped the levee at many points and was from 4 to 6 feet higher than any previous flood, clearly indicating that a complete levee system along the entire river would require an increase of 6 feet in the levee height along this basin. (Testimony, 301, 302.)

In the upper Tensas Basin nearly all levee construction has taken place since 1882—mainly since 1892. In the lower Tensas Basin there was an old levee existing before this period but of low grade and insufficient in strength. By 1897 the upper and lower Tensas Basin levees had attained an average height of 13 feet. In the flood of 1897 the river was from 2½ to 3 feet higher in front of these basins than in the flood of 1882, and hence the levees were insufficient. Had the river in 1897 not been any higher than in the floods of 1882–83 and 1884, the levees would have been ample. (Testimony, 330–332.)

Several serious crevasses occurred in these levees during this flood. The higher flood level of 1897 was largely due to increased levee construction and the further inclosures of river basins. (Testimony, 334.) The completion of the levee system would require the levees on the Tensas Basin to be raised to the height of from 17½ to 18 feet. (Testimony, 334, 335.)

In the St. Francis Basin levee construction began in 1893. Since that time a continuous levee of an average height of 9 feet has been constructed from Point Pleasant, Mo., to Chute 38, Ark., a distance of 127 miles. About 100 miles more are required to reach the mouth of the St. Francis River and to entirely inclose the basin. The levees on the St. Francis Basin proved insufficient for the flood of 1897, and several serious and extensive crevasses occurred. These levees need to be made stronger and higher—at least 2 feet higher than the grade of 1897. (Testimony, 167–170.)

The flood of 1897 wrought great havoc, especially in the older levees, many of which have been defectively and improperly constructed. There were 23 breaks in the St. Francis front, 6 in the Yazoo front, 14 in the White River front, and 4 in the Tensas front, most of which occurred from an overtopping of the levees. Below the Red River there were only a few small breaks, and these were closed during the pendency of the flood. (Testimony, 432.) Engineer Ockerson in his testimony (p. 432) describes the flood of 1897 and compares it with the flood of 1882, as follows:

"From a point about 100 miles below Cairo to the Gulf the stage reached in 1897 was greater than any previous record. As far as volume of water is concerned, however, the flood of 1882 was much greater than that of 1897. The flood of 1882 stood above the danger line at Cairo, or 42 feet on the gauge, for a period of 72 days. The flood of 1897 stood above the danger line for a period of 54 days. During the flood of 1897 the tributaries below Cairo were all rather low."

Table showing relative heights of floods of 1882 and 1897.

	1882	1897		1882	1897
Cairo	51.9	51.6−0.3	Greenville	41.7	46.8+5.1
Belmont	45.1	45.1 0.0	Lake Providence	38.3	44.4+6.1
New Madrid	40.9	40.3−0.6	Vicksburg	48.8	52.4+3.6
Cottonwood Point	37.5	39.5+1.8	St. Joseph	44.9	47.9+3.0
Fulton	36.7	37.5+0.8	Natchez	47.8	49.8+2.0
Memphis	35.2	37.7+2.5	Red River	48.5	50.2+1.7
Mhoons	39.8	41.6+2.8	Bayou Sara	39.3	43.8+4.5
Helena	47.2	51.8+4.6	Baton Rouge	36.0	40.7+4.7
Sunflower	41.7	47.3+5.6	Plaquemine	31.3	36.3+5.0
White River	48.4	52.4+4.0	College Point	23.2	28.0+4.8
Arkansas City	47.1	51.9+4.8	Carrollton	15.0	19.0+4.0

A due consideration of the testimony and other data bearing on the subject makes it clear that the flood of 1897 was, in its effects and consequences, greatly enlarged and aggravated by the extensive inclosure of basins and the extended and enlarged levee construction that had taken place since the floods of 1882–83 and 1884 (testimony, 241), though it is doubtless true that if no levees at all had been in existence a larger area would have been submerged. Engineer Starling, in his book (41, 42), to which we have already referred, concurs in this conclusion in the following clear and apt language:

"It is not only the magnitude of the flood of 1897 which has made it of surpassing importance to the engineers of the Mississippi service. The widespread damage which it has wrought, while great, is yet not without a parallel. Its principal interest to the engineer is due to the experience which has been derived from the wholesale closure of unleveed tracts and the extraordinary elevation of its high-watr line consequent thereon. There are two of the great basins into which the Mississippi Valley is divided which have only recently been protected to any extent by levees. These are the St. Francis and the While River Basins. The former was closed during the last three years, or since the flood of 1893, to a distance, measured along the river, of about 120 miles. There still remains a gap of about 100 miles. The White River Basin has been undergoing a gradual process of closure for several years. In 1893 there was a gap of about 15 miles, extending between points 330 and 360 miles, respectively, by river, below Cairo. In 1896 this gap was closed and the line of levee was made continuous from the hills at Helena to a point 8 miles above the mouth of White River. It is to the building of these lines and to the maintenance of the lines previously existing until a late period of the flood that the unparalleled stages attained by the water have been due."

The construction and repair of levees was, in the first instance, undertaken by riparian owners, afterwards by parishes or counties, then by the States or certain levee districts, under the authority of the States, and finally by the latter and the Federal Government combined, which is the system now prevailing. The first material aid given by the Federal Government was a grant of swamp and overflowed lands, made to the several States in 1850. The same year Congress also made provision for a survey and investigation of the Mississippi River.

This work was carried on for the next 10 years under the direction of Capt. Humphrey and Lieut. Abbott, who made their final report in 1861. This report was most thorough and exhaustive, and is still the standard work on the hydraulics and physical features of the river. It made clear that no substantial relief from floods could be obtained from reservoirs or outlets, and that levees, properly constructed, would afford the necessary relief and protection. Neither the testimony taken by your committee nor other obtainable data has shaken or invalidated these conclusions. During the Civil War levee construction was at a standstill. After the war was over the several States began, without concert and without due plan or system, to extend and repair the levees. But the great flood of 1874 showed how inadequate, both in quality and quantity, the efforts of the States were. Congress again intervened and passed an act providing for the appointment of a commission of five engineers to investigate, determine, and report as to the best plan for relief against the floods.

This commission made its report in 1875, and came to the same conclusion as Humphrey and Abbott did in 1861, that a system of levees could alone afford adequate protection. But no systematic improvement of the river by the Federal Government was yet undertaken. Finally, in 1879, Congress passed an act creating the Mississippi River Commission, outlining its work in the following terms:

"It shall be the duty of said commission to take into consideration and mature such plan or plans and estimates as will correct, permanently locate, and deepen the channel and protect the banks of the Mississippi River; improve and give safety and ease to the navigation thereof; prevent destructive floods; promote and facilitate commerce, trade, and the postal service."

From 1879 to 1882 $1,475,000 was appropriated by Congress for expenditure by the commission in making surveys and in improving the navigation of the river, but none of it was allotted for levee construction. In 1882 Congress appropriated the gross sum of $4,123,000, and from this the first direct allotment for levee construction was made—about $1,300,000 in all. (Testimony, 237.)

The testimony of Judge Taylor, a member of the commission, explains in detail the make-up of the commission, the mode in which it performs its work, and the methods it pursues. From each appropriation made the commission allots a certain proportion for the construction and repair of levees in each levee district, which is expended by the United States engineer in charge of the district. The commission plans the work, subject to the approval of the War Department, and the district engineers carry on the work conformable to the plan.

Gen. SCOTT. I thank you for your courtesy in hearing me.

Senator NEWLANDS. Let me present a telegram from Senator Broussard in which he asked me to bring the matter to the attention of the committee. The telegram which I read is addressed to his clerk, Mr. Paul J. Christian, and is as follows:

> Please get copy of my amendment about Atchafalaya River to flood-control bill and see Senator Newlands at once. Ask him please not to forget to make it part of his redraft of the flood-control bill.

The amendment I shall put in the hands of the reporter, the amendment which Mr. Broussard offered to the Humphreys flood-control bill, and I ask also that that amendment be considered in connection with my substituted bill, which was originally offered here as a tentative committee draft, but was yesterday introduced in the Senate.

I also want to say that Senator Broussard is exceedingly anxious about this Atchafalaya Pass. It is practically the creation of a new outlet for the river, and to that extent diminishes the pressure upon all that part of the Mississippi River that lies below the connection of the Red River with the Mississippi, and in that way relieves the pressure upon New Orleans.

I would also ask to insert in the record a letter dated December 21, 1916, from the Secretary of War to myself upon this subject, which I will not read at this time.

I want to add just one word, and this is, allusion has been made to the fact that the so-called Newlands proposition has been beaten in the House, was offered as an amendment, I believe, by Mr. Crosser. I wish to state that bill, according to my recollection, is an entirely different bill from the one now presented, and I think Mr. Humphreys will agree with me. The bill I now present is a junction of the flood-control bill and the so-called Newlands bill, and a very serious modification and contraction of the Newlands bill, leaving the flood-control bill practically in its entirety.

(The documents offered by Senator Newlands are printed in full, as follows:)

[H. R. 14777. Sixty-fourth Congress, first session.]

AMENDMENT Intended to be proposed by Mr. Broussard to the bill (H. R. 14777) providing for the control of the Mississippi River and of the Sacramento River, California, and for other purposes, viz:

On page 2, line 8, after the words "headwarters of the river," strike out the rest of the line and lines 9, 10, 11, and that part of line 12 down to and including the word "means," and insert the words "and the Atchafalaya River is hereby declared to be a part of the Mississippi River, subject to the jurisdiction of the Mississippi River Commission and the navigation for commerce and the control of the floods of said river shall be provided for and shall proceed under such plans as to its divorcement from the Mississippi River or the leveeing, bank revetments, spillways, and such other improvements and enlargements as may be approved by the commission, under the direction of the Secretary of War, and the work of other agencies under this act shall be adjusted with reference thereto. Appropriations made for the Mississippi River shall be considered and treated as made also for the Atchafalaya River as a part of the Mississippi River improvement.

WAR DEPARTMENT,
Washington, December 21, 1916.

MY DEAR SENATOR NEWLANDS: I have your letter of December 16. Shortly after I came to Washington I was called into conference with some of my associates in the Cabinet on the question of the propriety of the formulation of a complete measure for water conservation covering the various sections of the country. At that time the measure of Mr. Humphreys, of the House, for the lower Mississippi and the Sacramento Rivers was well advanced and the conclusion was reached that it would be a wise thing to have such a consolidation of the pending measure as would bring flood control and river regulation together under the joint administrative supervision of a committee of the Cabinet composed of the Secretaries of those departments in which the various aspects of river and water control and regulation come. Senator Ransdell and you and I had conferences on this matter, and at other times I conferred with Mr. Humphreys. My understanding of the matter was that we were in agreement in believing that the constitution of such a committee of the Cabinet for the administrative control of these matters would lead to harmonious and comprehensive planning in dealing with the waters of the country and would correlate the various interests of navigation, water-power development, reclamation of swamp lands, and flood control in such a way as to make each river project receive consideration from all of these points of view, rather than independent treatment at the hands of the several administrative subdivisions of the Government. I very strongly entertain the view that this ought to be done. Just what legislative measures now pending before Congress ought to be included in this consolidation I do not venture to say, but I do believe that the flood-control bill and the principle of your bill for river regulation should be so consolidated, and at the same time the projects for the lower Mississippi and Sacramento Rivers included without prejudice to these latter projects, thus making a beginning upon a more efficient system for the treatment of these great water and conservation questions by the Government.

Cordially, yours,

NEWTON D. BAKER,
Secretary of War.

Hon. FRANCIS G. NEWLANDS,
United States Senate.

(Thereupon, at 12.20 o'clock p. m., the committee adjourned.)

U.S. Congress Senate Committee on Commerce.

APPENDIXES

HEARINGS BEFORE THE SENATE SUBCOMMITTEE ON COMMERCE IN 1916, TOGETHER WITH CERTAIN OTHER PAPERS RELATING THERETO.

[Senate Document No. 550, Sixty-fourth Congress, first session.]

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APPENDIX A.

RIVER REGULATION, FLOOD CONTROL, AND WATER CONSERVATION AND UTILIZATION.

TUESDAY, JUNE 27, 1916.

UNITED STATES SENATE,
SUBCOMMITTEE ON COMMERCE,
Washington, D. C.

The subcommittee met in the committee room, Capitol, at 11 o'clock a. m. pursuant to call, Senator Joseph E. Ransdell presiding.

Present: Senators Ransdell (chairman), Vardaman, and Kenyon.

Also present: Senator Francis G. Newlands, Mr. Arthur P. Davis, Mr. George Otis Smith, Dr. F. H. Newell, Mr. Henry S. Graves, Mr. Charles S. Marvin, Mr. George R. Putnam, Mr. William Bowie, and Dr. William A. Taylor.

The subcommittee proceeded to consider the bill introduced by Mr. Newlands (S. 5736), to promote interstate commerce, agriculture, and the general welfare by providing for the development and control of waterways and water resources, for water conservation, for flood control, prevention, and protection; for the application of flood waters to beneficial uses; and for cooperation in such work with States and other agencies, and for other purposes, which is here printed in full as follows:

[S. 5736, Sixty-fourth Congress, first session.]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the sum of $60,000,000, to be apportioned as hereinafter provided, is hereby reserved, set aside, appropriated, and made available until expended, out of any moneys not otherwise appropriated, as a special fund in the Treasury, to be known as the "river-regulation fund," to be used to promote interstate commerce by the development and improvement of the rivers and waterways of the United States and their connections with the Great Lakes and with each other, and by the coordination of and cooperation between rail and water routes and transportation, and the establishment and maintenance of adequate terminal and transfer facilities and systems, and their maintenance, improvement, and protection, and by the making of examinations and surveys and by the construction of engineering and other works and projects for the regulation and control of the flow of rivers and their tributaries and source streams, and the standardization of such flow, and by the maintenance of navigable stages of water at all seasons of the year in the waterways of the United States, and by preventing silt and sedimentary material from being carried into and deposited in waterways, channels, and harbors, and by the conservation, development, and utilization of the water resources of the United States, and by flood prevention and protection, through the establishment, construction, and maintenance of natural and artificial reservoirs and detention basins for water storage and control, and levees, revetments and other bank-protective works, spillways, wasteweirs, wasteways, by-passes, controlled outlets, and flood-control works of every nature and kind, and the protection of watersheds from denudation, erosion, and surface wash, and from forest fires, and the maintenance and extension of woodland and other protective cover thereon, and the reclamation of swamp and overflow lands and arid lands, and the building of drainage and irrigation works in order that the flow of rivers shall be regulated and controlled not only through the use of flood waters for irrigation on the upper tributaries, but also through controlling them in fixed and established channels in the lower valleys and plains and by doing all things necessary to provide for any and all beneficial uses of water that will contribute to its conservation or storage in the ground or in surface reservoirs as an aid to the regulation or control of the flow of rivers, and by acquiring, by purchase, condemnaiton, or otherwise, holding, using, leasing, hiring, and transferring by appropriate deed lands and any other property that may be needed for the aforesaid purposes, or which it may be deemed advisable to dispose of, and by doing such other things as may be specified in this act or necessary to the accomplishment of the purposes thereof, and by securing the cooperation therein of States, municipalities, and other local agencies, as hereinafter set forth, and for the payment of all expenditures provided for in this act.

The aforesaid sum of $60,000,000, appropriated as hereinbefore provided, shall be apportioned for expenditure under this act as follows:

(a) $25,000,000 to the Illinois River and its watershed and to the Mississippi River from the mouth of the Illinois to the Head of the Passes, including the Atchafalaya River as one of the mouths of the Mississippi River, to be expended for the improvement of the Illinois River and for continuing the improvement of the Mississippi River from the Head of the Passes to the mouth of the Illinois River, for the control of floods thereon, and the establishment of a waterway from the Lakes to the Gulf; (b) $5,000,000 to the watersheds of the Ohio River and its tributaries, for the control of floods thereon, and the consequent improvement of navigation; (c) $5,000,000 to the watershed of the Mississippi River above the mouth of the Illinois River; (d) $5,000,000 to the watersheds of the Missouri River and all other tributaries of the Mississippi River, except the Ohio, from the mouth of the Illinois River to the Gulf and all rivers draining into the Gulf of Mexico west of the Mississippi River; (e) $5,000,000 to the watersheds of the rivers draining into Canada, the Great Lakes, and the Atlantic Ocean and rivers draining into the Gulf of Mexico east of the Mississippi River; (f) $5,000,000 to the watersheds of all the rivers draining into the Pacific Ocean in Oregon and Washington, including the Columbia River watershed; (g) $5,000,000 to the watersheds of the rivers draining into the Sacramento and San Joaquin Valleys and into the Pacific Ocean north of Santa Barbara, in California; (h) $5,000,000 to the watersheds of all other rivers in California and the Great Inland Basin and the Colorado River.

NATIONAL WATERWAYS COUNCIL.

SEC. 2. That a national waterways council, hereinafter called the council, is hereby created, consisting of the President of the United States as chairman, the Secretary of War, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, and the chairman of the water control board, to be appointed as hereinafter provided.

The council shall have authority to direct and control all proceedings and operations and all things done or to be done under this act, and to establish all rules and regulations which may, in their judgment, be necessary to carry into effect such direction and control consistent with the provisions of this act and with existing law and with any provisions which Congress may from time to time enact.

All plans and estimates prepared by the water control board, as hereinafter provided, which contemplate or provide for expenditures from the river regulation fund shall be submitted to the council for final approval before any of the expenditures therein provided for or contemplated are authorized or made or any construction work undertaken or contracts let under or in pursuance of such plans: *Provided*, That in case of an emergency the chairman of the water control board shall have full power to act, and shall report in detail his action in every case to the council at its next meeting after his action.

WATER CONTROL BOARD.

SEC. 3. That to assist in carrying out the purposes aforesaid the council may utilize the various agencies of the Government, and there is hereby created a water control board, hereinafter called the board, which shall consist of a chairman, to be appointed by the council, and four assistant secretaries, to be appointed as hereinafter provided, and such additional members as the council may from time to time appoint. The chairman of the board shall receive a salary of $12,000 per annum, each assistant secretary aforesaid shall receive a salary of $10,000 per annum, and said additional members of the board such salaries as the council may from time to time fix. Subject to the direction and control of the council as to general policy and procedure, it shall be the duty of the board to ascertain in detail the work in progress and obtain plans, recommendations, and estimates of the work contemplated in the general field of water conservation, control, and utilization by the various agencies of the Government, States, counties, municipalities, districts, communities, corporations, associations, and individuals, and on the basis of such information and the results obtained by its own surveys and investigations to prepare for the consideration of the council a general and comprehensive program of water and waterways conservation, regulation, development, and utilization, extending through a number of years, with comprehensive general plans for each watershed, treating the entire watershed of each river as a unit, and with specific projects, plans, estimates, and recommendations, involving independent work by the United States and the combining of resources and energies of the various public and private agencies aforesaid; to coordinate and bring into conference the various agencies of the Government; and to examine, compare, adjust, allot, assign, and supervise their work, to the end that duplication may be avoided and the highest efficiency obtained; by agreement to assign to the various cooperating agencies the work to be done by them within their respective spheres; to accept, on behalf of the United States, from such agencies contributions of money and property of any kind to be used for carrying out the purposes authorized by this act; to make field inspection of all work done or contemplated under this act by the Government and its cooperating agencies; and to employ such engineers, transportation experts, experts in water development, constructors, and other employees, and to construct such buildings and works as may be necessary for those purposes. The board is hereby authorized to expend from the sums herein provided such amounts as may be necessary for services of employees in the city of Washington, District of Columbia, and elsewhere; to pay therefrom such sums as may be necessary for office accommodations in the city of Washington, District of Columbia, and elsewhere, and to purchase such law books, books of reference, periodicals, engineering, statistical, and professional publications as may be needed. Contributions received under this section shall be used by the board, under the direction of the council, for carrying out the purposes of this act, and money so received shall be paid into the river-regulation fund herein created. Subject to the approval of the council, the board is authorized to enter into such contracts or carry on by hired labor or otherwise such work as may be necessary for carrying out the purposes of this act, within the limits of appropriations made or authorized by this act or appropriations or contributions which shall be hereafter made or authorized from time to time, or as may be necessary for executing projects under this act within the respective limits of cost thereof approved by the Congress, the funds for which shall have been provided by the Secretary of the Treasury in accordance with the authority conferred by this act. Subject to the approval of the council the board may also employ the various agencies of the Government in carrying out such purposes or executing such projects.

COOPERATION WITH STATES AND OTHER AGENCIES.

SEC. 4. That the board shall, in all cases where possible and practicable, encourage, promote, and endeavor to secure the cooperation of States, municipalities, public and quasi public corporations, towns, counties, districts, communities, persons, and associations in the carrying out of the purposes and objects of this act, and in making the investigations and doing all coordinative and constructive work provided for herein; and it shall in each case endeavor to secure the financial cooperation of States and of such local authorities, agencies, and organizations to such extent and in such amounts as the council shall determine to be a just and equitable apportionment of work, costs, and benefits under all the circumstances in each case; and it shall negotiate and perfect arrangements and plans for the apportionment of work, cost, and benefits, according to the jurisdiction, powers, rights, and benefits of each, respectively, and with a view to assigning to the United States such portion of such development, promotion, regulation, and control as can be properly undertaken by the United States by virtue of its power to regulate interstate and foreign commerce and promote the general welfare, and by reason of its proprietary interest in the public domain, and to the States, municipalities, communities, corporations, and individuals such portion as properly belongs to their jurisdiction, rights, and interests, and with a view to properly apportioning costs and benefits, and with a view to so uniting the plans and works of the United States within its jurisdiction, and of the States and municipalities, respectively, within their jurisdictions, and of corporations, communities, and individuals within their respective powers and rights, as to secure the highest development and utilization of the waterways and water resources of the United States.

APPOINTMENT OF WATER-CONTROL BOARD.

SEC. 5. That each head of a department named in this act is authorized to appoint, with the approval of the council, for service as a member of the board, a highly qualified representative, who shall be an assistant secretary in the department in which he is appointed; shall devote his time primarily to the work authorized by this act; shall have, subject to the direction of the head of the department, such general supervision and control as may be necessary for the purposes of this act of the agencies within the department engaged upon such work; shall serve during good service and behavior; and shall be removable by the head of the department only for good cause.

RIVER-REGULATION FUND.

SEC. 6. That no sums shall be paid out of the river-regulation fund except on vouchers signed by the chairman of the board or by an official designated by him in writing, drawn on the Secretary of the Treasury. To provide for carrying out the projects formulated under this act, which involve expenditures in excess of the $60,000,000 herein appropriated to the river-regulation fund, the appropriation hereafter to the credit of said fund of such sums as may be necessary is hereby authorized. At any time that the Secretary of the Treasury shall determine it to be necessary or advisable, in order to provide all or any part of the appropriation made or authorized by this act or which may be hereafter made or authorized or to provide revenues to execute a project under this act, which shall have been approved by the Congress, he may issue and sell, or use as a means of borrowing money, bonds in the necessary amount, in accordance with the provisions of the act of August fifth, nineteen hundred and nine (Thirty-sixth Statutes at Large, pages eleven and one hundred and seventeen), the act of February fourth, nineteen hundred and ten (Thirty-sixth Statutes at Large, page one hundred and ninety-two), and the act of March second, nineteen hundred and eleven (Thirty-sixth Statutes at Large, page one thousand and thirteen). The sums appropriated or provided by the Secretary of the Treasury pursuant to this section shall be paid into the river-regulation fund and shall be available until expended and paid out as provided for in this act. All moneys received in connection with any operations under this act as well as from the sales of materials utilized and any condemned property shall be covered into the "river-regulation fund" and be available for expenditure therefrom. It is the intent and purpose of this act to authorize and empower the council and the board and their officers, agents, and employees to do all necessary acts and things in addition to those specially authorized in this act to accomplish the purposes and objects hereof.

The CHAIRMAN. The committee will come to order. We will first hear Senator Newlands.

Senator NEWLANDS. Mr. Chairman, I would like first to have inserted in the record the following documents: A communication dated February 15, 1916, from Walter Parker, general manager, New Orleans Association of Commerce, to Hon. William C. Redfield, Secretary Department of Commerce, Washington, D. C.; also a recommendation made by Franklin K. Lane, D. F. Houston, and William C. Redfield, Secretaries of the Interior, Agriculture, and Commerce, respectively, to the President of the United States, inclosed in a communication to myself by the President, dated April 3, 1916. This communication contains recommendations of the departmental commission with reference to a comprehensive way of dealing with river development and regulation. I wish to state that at the time this meeting was held the office of Secretary of War was vacant. Since then an appointment has been made, and Mr. Baker, the present incumbent, has informed me that he coincides with his colleagues in their recommendation.

The CHAIRMAN. Have you anything in the nature of a written communication from Secretary Baker?

Senator NEWLANDS. No, sir; nothing to that effect. I presume the Secretary would be glad to appear before the committee at any time and confirm that statement.

I will state further that at my suggestion the chiefs of the coordinating services outside of the Engineer Corps of the Army—or rather of the proposed coordinating services—held a meeting recently to consider the various provisions of this bill which I have introduced—Senate 5736—and that they prepared a brief memorandum as to their views which will be referred to by Mr. Davis, and I ask that their memorandum of the results of the conference be printed in the record.

The **Chairman**. The papers will be inserted in the record.

(The papers referred to by Senator Newlands are here printed in full, as follows:)

[Telegram.]

New Orleans, *February 15, 1916.*

Hon. William C. Redfield,
Secretary Department of Commerce, Washington, D. C.

Dear Sir: One of the main-line levees of the Mississippi River in northern Louisiana has just given way in a district which suffered in 1912 and in 1913. A vast area of fertile farm land is being inundated. The people are fleeing from their homes. We are sending them help, as we always do. You are one of the members of the interdepartmental committee appointed many months ago to study the various submitted plans of stream and flood control. Your committee, we have been informed, reached an agreement upon the principle of the measures which were to be supported before Congress by the executive department. This organization, voicing the settled judgment of the business community of New Orleans, is on record as favoring the principle and the form of one great measure submitted to you for your approval, and by you in principle indorsed.

Through three sessions of Congress we have waited patiently for the action to which the Democratic Party is pledged and to which you gentlemen yourselves have submitted your belief and your approval. We have waited, conscious that each year of delay in approaching the problem of flood and stream control in a broad and comprehensive manner adds another year to the many years of our continual and recurring peril. Still no action has come. We do not presume to sit in judgment upon those of you who occupy posts in close relationship to the processes of legislation and of execution in the Federal Government, but we do know that our peril continues, that we lose in money and in lives in each returning year of flood. We suffer an invasion as real as though it were directed by the head of an alien Government. We lose lives as certainly as though they had been lost in Mexico or on the high seas. We suffer the imposition of indemnities which we must meet with taxes and bond issues that are just as much indemnities as though levied by a conquering army, and through the years and in proportion to the wealth of the region afflicted what we have lost and what we have paid surpasses the indemnities inflicted upon France after the Franco-Prussian War—the greatest indemnity ever paid by any one nation.

Here in New Orleans we feel that we as individuals and our investments are physically safe, because we have massed resources of human power and of material which enable us to keep our levee breastworks so far ahead of the long lines reaching up the two sides of the Mississippi River from here to Cape Girardeau that levees elsewhere give way before the flood level reaches us, and thus we are saved by the misfortune of our fellow citizens of the Mississippi Valley. We appeal to you now in behalf of those unfortunates in Kentucky, southern Missouri, Arkansas, Mississippi, and Louisiana who have lost their homes, their fortunes, or their lives through the onslaught of the forces of nature operating over the territory of thirty-odd States, and concentrating their evil effect upon those who live in the smaller regions on the lower reaches of the Mississippi Valley.

It is now too late for Congress to do more for those who are suffering than to give them food, if they need it, to furnish them with Government tents, and to put at their call the officers of the United States Army; but it is not too late for the interdepartmental committee to make known its conclusion and its findings with reference to suggested legislation having to do with the Inland rivers of the United States. It is not too late for the executive department of the Government to put its recommendations before Congress, to lend the strength of its influence in support of the measures already drafted and pending therein, which will bring to bear upon the whole vast interrelated problem of stream flow control, flood disaster prevention, and use of the rivers in navigation the coordinated power and capacity of the whole Federal Government. It is not too late for this administration and this Congress to undertake "after Panama" the task of "the inland rivers"; carrying out the policy so well phrased and indorsed by

President Wilson in his telegraphic message to Senator NEWLANDS, dispatched in the autumn of 1912:

SEAGIRT, N. J., *September 29, 1912.*

Hon. FRANCIS G. NEWLANDS,
President Irrigation Congress, Salt Lake, Utah:

Please express to the National Irrigation Congress my hearty approval of the policy it is met to promote, and especially of the policy of supplementing bank and levee protection by storage of flood waters above for irrigation and water power, turning floods from a menace into a blessing and at the same time abundantly feeding navigable waters.

WOODROW WILSON.

Is it asking too much to request you to read this telegram at the next Cabinet meeting as a respectful and an urgent message from the Association of Commerce, as representing the afflicted and jeopardized people, to the responsible heads of a Government from which we had expected adequate measures of safety?

WALTER PARKER,
General Manager New Orleans Association of Commerce.

THE WHITE HOUSE,
Washington, April 3, 1916.

Hon. FRANCIS G. NEWLANDS,
United States Senate.

MY DEAR SENATOR: I take the liberty of sending you inclosed a copy of a memorandum concerning flood control which the Secretaries of the Interior, of Agriculture, and of Commerce were kind enough to prepare for me. I hope that it will prove of interest to you. I know that you were consulted at the time the memorandum was contemplated.

Sincerely, yours,

WOODROW WILSON.

DEPARTMENT OF THE INTERIOR,
Washington, February 26, 1916.

DEAR MR. PRESIDENT: In accordance with your suggestion, we beg to present a résumé of our views as to the practicable way of dealing with the problem of so regulating and handling our rivers that they will be made to be of greater use and of less injury to the Nation.

We do not feel the necessity for emphasizing the need for such legislation. Each recurring year makes plain the greatness of the work that must be undertaken if we are to keep our rivers within their banks. The floods of each year take their toll in property and lives. Our streams are filling with silt and their channels becoming less certain and reliable as nature's primal highways. Vast bodies of lands of the richest alluvial character are submerged so large a portion of the time as to be of no value to the Nation and of no service to the world. Therefore, to make more navigable our streams, to protect the cities and farms already established, and to make a place for others, to save life and increase our crops, to conserve the waters on the higher reaches of the streams where they may be used for needed irrigation, and to convert their fall into electric power—these are the chief ends to be reached by river improvement.

It is now time, we believe, to urge a comprehensive and constructive plan of river development upon Congress, a plan which recognizes the magnitude of the problem, the impossibility of dealing with it by temporary expedients and that looks definitely to the time when the flood evils of to-day will be remedied and the waters put to their highest use. This means nothing less than a study under one responsible authority of the problems and possibilities of each river, and after such study a determination upon a definite policy with regard to it and the commitment of the Government to the pursuit of such policy. It has been suggested that an adequate lump sum and continuing fund for carrying on such national work shall be placed in the hands of a commission composed of the President and four of his cabinet, which fund shall be expended upon such projects as it sees fit. We do not think this plan in its logical entirety necessary to the end in view.

We do believe, however, that the Congress should commit itself to a comprehensive policy of river development, involving the expenditure over a long period of a large sum of money, with sufficient appropriations immediately available for continuing the work on the lower Mississippi, substantially in accordance with the plans of the Mississippi River Commission, and for taking the necessary preliminary steps for the study of problems and the projection of work on other parts of the Mississippi and of other rivers. It should study each river system and as projects are developed, reports with recommendations for expenditure should be made to Congress, with the inderstanding that Congress, on the basis of the data furnished, would provide sufficient sums for the continuous prosecution of the work. There are precedents for this course, such as the Panama Canal and the Alaskan railroad projects. In these cases Congress determined that such enterprise should be undertaken, the general lines of development, and in a sense pledged itself to award the money necessary for the completion of the enterprise within a limited time, leaving the details of the plans and their execution to executive bodies.

We believe that for the execution of such a policy the Congress should authorize a national waterways council, composed of the President and the four heads of departments most concerned, War, Interior, Agriculture, and Commerce, and a subordinate water-control board, composed of a highly qualified representative from each of the four departments and of such engineers or other officials as the Congress may authorize. The four department representatives of the latter board should have such standing in the departments and such functions as would enable them to secure such data and services in connection with the work from the various bureaus in the departments as may be serviceable and necessary. The national waterways council should be authorized to direct and control the general policy and procedure of the water-control board and other agencies charged with the execution of the work, to establish the necessary rules and regulations, to consider and approve pland, the distribution of funds under authorization from the Congress, to decide questions of conflict, and to report to Congress. The latter board should be authorized to coordinate and invoke the services of the necessary bureaus and agencies of the Government, to make preliminary surveys and detailed plans for work in various areas, to prepare estimates, to study the activities of the States, municipalities, organizations, and individuals in water regulation, to prepare a general program of water and waterways regulation and development involving the combined resources and cooperation of all the agencies, to recommend to the council for approval the assignments for the different bureaus or services of the departments, to complete statements of the work already accomplished, and immediately to supervise the prosecution of the work under the plans approved. It would be understood that in the meantime there should be no interference with the execution of the existing plans of the Mississippi River Commission for the work on the lower Mississippi, and that these plans should proceed as outlined unless it should become clear that improvements could be made.

The most pressing call for help has come and continues to come from the lower Mississippi. As to this river what may be determined defensive plans have been elaborated by the eminent body of national officials who are now prepared to proceed with their work to its completion. Their embarrassment arose out of the fact that they can not plan for the execution of their work continuously and for a sufficiently long period, owing to the fact that each year the work must wait on the appropriations for that year. There would seem to be every reason for prosecuting these plans vigorously, and later as investigations proceed for supplementing these works with others of a constructive nature higher up the river, and for undertaking as soon as possible projects on other rivers.

To summarize, we recommend:

1. That Congress declare its purpose to deal with our river problems in a comprehensive way, involving a large ultimate expenditure of funds and the immediate expenditure of considerable amounts, and the creation of machinery intimately related to the executive branch of the Government.

2. That the boards and the other parts of the machinery provided for shall be directed to continue the work on the lower Mississippi substantially under existing plans, and to proceed with the investigations and the elaboration of plans on other parts of the Mississippi River and other rivers of the Nation.

3. That all the available agencies of the Government shall be coordinated in this endeavor to improve and protect our rivers, to control floods, to utilize waters, and to reclaim valuable lands and make the necessary reports to Congress as bases for additional appropriations.

4. That the expenditures for this work, should, in the main, be met by the sale of national bonds, and that the lands benefited should be made to bear a proportion of such expenses, agreements in this regard to be submitted to the Congress as part of the plan for development.

Cordially, yours,

Franklin K. Lane,
D. F. Houston,
William C. Redfield.

The President,
The White House.

JUNE 23, 1916.

Hon. F. G. NEWLANDS,
United States Senate.

MY DEAR SENATOR: Over two weeks ago, in conversation with you at the Willard Hotel, I stated my intention to start west in a day or two to look after certain important reclamation duties. At that time you requested that I make a statement before the Committee on Commerce concerning pending legislation, which was to be immediately after the Democratic convention.

For this reason I postponed my trip, and on June 12 I received a telegram from you, as follows:

"After conventions are over Senate committee will have hearing on Humphreys and Newlands bills. Kindly get from my office my recent speeches on water control, and also Cooley's, Maxwell's, Broussard's, and my statements before House Committee on Flood Control and arrange for statements by yourself and chiefs of forest and other scientific services before Senate committee."

I immediately called up your office and requested the documents mentioned, which have just arrived to-day.

I am very anxious, indeed, to start west on account of certain urgent matters which have been postponed from time to time because of my delay, and hope that some arrangement can be made to have this appearance very soon, or preferably to be excused therefrom.

I am inclosing a manuscript of some arguments I have been thinking of, with the idea of presenting them to the committee at this hearing, and wonder if the presentation of this manuscript to the committee would not answer every purpose and permit me to leave within a few days.

I am anxious to do whatever is best for the public interests, but to me the immediate needs of the Reclamation Service loom large.

Cordially, yours,

A. P. DAVIS,
Director and Chief Engineer.

MINUTES OF MEETING OF REPRESENTATIVES FROM SCIENTIFIC BUREAUS IN CONSIDERATION OF SENATE BILL 5736, INTRODUCED BY SENATOR NEWLANDS.

The meeting was held in the office of the Reclamation Service, at 10 a. m., June 23, 1916.

Present: A. P. Davis, Director and Chief Engineer Reclamation Service; Charles F. Marvin, Chief of Weather Bureau; William L. Marshall, consulting engineer to the Secretary of the Interior; George R. Putnam, Commissioner of Lighthouses; W. A. Taylor, Chief Bureau of Plant Industry; H. S. Graves, Chief Forest Service; William S. Hall, Forest Service; George Otis Smith, Director Geological Survey; William Bowie, Coast and Geodetic Survey; Milton Whitney, Chief of Bureau of Soils.

Memorandum drawn up by Mr. Davis was read to the conference, for discussion and consideration.

Bill S. 5736, introduced April 24, 1916, was read by Mr. Bowie.

The conference discussed the various provisions of the bill, and unanimously approved the plan of coordinating the efforts of the bureaus interested in water supply and river control, and believes that the provisions of the bill as drawn would secure such coordination.

It was the general opinion that at the present time it would be unwise to favor large appropriation for construction work, but would leave that until the board to be constituted by the bill shall have investigated the field and made recommendations on this subject.

The conference recommended an appropriation of $1,000,000 for expenses of organization, and the investigation and consideration of existing data regarding river control in order that the board could make intelligent recommendation to Congress at the end of the year.

The CHAIRMAN. The latter paper shows who participated, does it not?

Senator NEWLANDS. Yes; Mr. Davis, Mr. Marvin, Mr. Marshall, Mr. Putnam, Mr. Taylor, Mr. Graves, Mr. Hall, Mr. George Otis Smith, Mr. Bowie and Mr. Whitney.

Mr. Chairman, Mr. Davis, Chief of the Reclamation Service, is about to leave the city and I asked that this meeting should be held with a view to taking his statement, and thinking it might meet the convenience of the committee I also requested the chiefs of the bureau services which relate to water and who participated in this conference to appear, and I suggest that perhaps it might be convenient to the committee to dispose of the entire matter to-day.

STATEMENT OF MR. ARTHUR P. DAVIS, DIRECTOR AND CHIEF ENGINEER OF THE RECLAMATION SERVICE.

Mr. DAVIS. Mr. Chairman, the United States Reclamation Service is engaged in the construction of works primarily for irrigation in 16 Western States of the United States.

The reclamation law is intended primarily for the reclamation of land by means of irrigation and incidental drainage. In the majority of cases a proper water supply requires the construction of storage reservoirs by which the flow of the streams in winter and the freshet flow from the melting snows in the spring and early summer are impounded for use during the latter part of the summer when needed for maturing crops.

In some cases, these storage reservoirs are incidentally valuable for regulating the flow and preventing damages from overflow in the Valleys below, but being used primarily for irrigation they are not kept empty and are hence not as useful in regulating floods as they would be if used for that purpose only. The primary function of an irrigation reservoir requires that it be kept as nearly full as may be possible while the requirement for flood control only indicates the advisability of keeping the reservoir empty as much as practicable so as to have the maximum amount of regulative effect upon the floods.

To a certain extent, however, these functions can be joined, and even when a large reservoir is full, it usually has a large surface area and spillways which can not discharge their full capacity until a considerable rise has taken place in the surface of the reservoir, and thus a considerable regulative effect is secured, even though the great flood may find the reservoir full. The diversion capacity of canals also has a direct, but usually small influence in reducing such floods as occur in the growing season, as many of them do.

The habits of the rivers and the effect of existing or contemplated works on flood regulation forms an interesting problem in each case and in some instances is an essential element of a reclamation project.

The Pathfinder Dam on the North Platte River in Wyoming forms a reservoir of 1,100,000 acre-feet capacity which, while less than the mean annual discharge at this point, is greater than the flow in minimum years. Shortly after this reservoir was constructed, the North Platte Basin was visited by a flood nearly twice as great in maximum discharge as any previously recorded. The portion occurring above the reservoir was accumulated therein with only a moderate discharge flowing through the gates yet the discharge below this reservoir was about as great as any previous flood and did considerable damage by overflowing the valley below. Had it not been for the reservoir, the flood wave would have been nearly twice as large and greatly prolonged, and it is believed would have swept away nearly all the bridges over the North Platte River, besides inundating many towns and large areas of agricultural land. It is believed that the damage from this flood uncontrolled would have been greater than the entire cost of the reservoir. Without any special attention to the flood control element, the Pathfinder Reservoir is bound at all times to exert a powerful regulative effect upon flood discharges in the North Platte River.

The Elephant Butte Reservoir on the Rio Grande has been constructed with a capacity of about 2,700,000 acre-feet, and is designed primarily for irrigation. It will, however, necessarily have a great influence upon flood control in the valley below, where the river has in past inundations caused great damage to railroads and riparian property. In this case the interests of the project demand that the flood discharge be limited to the capacity of the river channel, which is about 8,000 cubic feet per second, and there is a possibility at rare intervals, that a flood of nearly this magnitude may be brought into the stream below the reservoir. Plans have, therefore, been made to provide for the discharge of flood flow from the full reservoir in such a manner as to prevent the discharge of more than 8,000 cubic feet per second, and a controllable spillway is provided by which this discharge can be temporarily shut off in case of a phenomenal flood in the valley below. By these provisions, it is expected at all times to control the flood discharge to within about one-quarter of the natural volume and thus eliminate all flood damages.

The Salt River Reservoir will also have an important effect upon the height of flood waves in the river below and will obviate considerable damage which would otherwise be caused.

The following table gives a list of the projects with the amount of diversion and storage required upon each. These are separated in such a way as to show what reservoir system would be affected by this use of the water.

Location of reclamation projects by States and drainage basins, the areas to be irrigated, the capacities of diversion canals and of reservoirs.

Project.	Acreage.	Diversion, second-feet.	Storage, acre-feet.
MISSOURI RIVER BASIN.			
Huntley, Montana	33,000	500	None.
Sun River, Montana	120,000	2,680	200,000
North Platte, Nebraska-Wyoming	230,000	2,830	1,150,000
Lower Yellowstone, Montana-North Dakota	60,000	800	None.
Milk River, Montana	120,000	1,400	335,000
North Dakota Pumping, North Dakota	12,000	90	None.
Belle Fourche, South Dakota	100,000	1,600	205,000
Shoshone, Wyoming	150,000	31,000	472,000
	825,000	40,900	2,362,000
COLORADO RIVER BASIN.			
Salt River, Arizona	190,000	3,200	1,367,000
Yuma, Arizona-California	130,000	1,900	None.
Grand Valley, Colorado	53,000	1,425	None.
Uncompahgre Valley, Colorado	140,000	3,025	100,000
Strawberry Valley, Utah[1]	....	....	278,000
	513,000	9,550	1,745,000

[1] Storage in Colorado River Basin, diversion and irrigated lands in Great Interior Basin stored water carried through rim of Great Basin by tunnel.

Location of reclamation projects by States and drainage basins, the areas to be irrigated, the capacities of diversion canals and of reservoirs—Continued.

Project.	Acreage.	Diversion, second-feet.	Storage, acre-feet.
COLUMBIA RIVER BASIN.			
Minidoka, Idaho	120,000	2,400	840,000
Boise, Idaho	255,000	2,500	422,000
Umatilla, Oregon	36,000	815	50,000
Okanogan, Washington	10,000	110	15,000
Yakima, Washington	145,000	1,500	1,084,000
	566,000	7,325	2,411,000
RIO GRANDE BASIN.			
Carlsbad, New Mexico	25,000	450	77,000
Rio Grande, New Mexico	155,000	1,950	2,640,000
	180,000	2,400	2,717,000
SACRAMENTO BASIN.			
Orland, California	20,000	555	51,000
GREAT INTERIOR BASIN.			
Truckee-Carson, Nevada	165,000	3,400	926,000
Strawberry Valley, Utah[1]	60,000	600	....
	215,000	4,000	926,000
KLAMATH BASIN.			
Klamath, Oregon-California	70,000	1,595	575,000
Total	2,389,000	66,325	10,787,000

[1] Storage in Colorado River Basin, diversion and irrigated lands in Great Interior Basin stored water carried through rim of Great Basin by tunnel.

An illustration of the necessity of carrying out the various activities relative to river regulation under one management is in the Sacramento Valley, Cal., where flood control is being considered by one organization and the utilization of the water for irrigation and power by another. Considered as a matter of flood control, the construction of large reservoirs in the Sacramento drainage basin is, in the opinion of those considering the subject, unwarranted and impracticable, although it would be of considerable assistance. The benefit to flood control is not sufficient to justify the expense of the reservoirs. Considered purely as an irrigation and power proposition the construction of these reservoirs is likewise of doubtful feasibility on account of their expense, but considered in connection with all its benefits the problem takes on an entirely different aspect and dictates a radically different solution of the problems involved from that which would be reached by considering them separately.

In many States the problems of navigation, flood control, and power development require the regulation of the rivers, so that the great floods can be held for utilization during low-water periods. The feasibility of such control depends in turn upon the existence, preservation, and utilization of natural reservoir sites, consisting often of broad valleys or marshes which can feasibly be converted into lakes to store the surplus water. Interests concerned only with drainage problems may drain, cultivate, and populate the marshes, which under a broad consideration of the question should be used as reservoirs and which may be the only feasible reservoir sites available, and their drainage and settlement may operate to defeat the most feasible solution of the problems considered broadly.

Where storage reservoirs are designed for the double function of storing water for industrial uses and alleviating flood damages, they require radically different treatment from that required if only one function is to be subserved. These two functions are to a large extent antagonistic. The storage of water requires the holding of water in the reservoir, and in general this should be done to the maximum feasible extent. On the contrary, the control of floods requires that the storage available for this service be maintained empty so far as possible so as to be available for the maximum service of this character. In some regions, especially upon streams which are fed mainly from melting snows, the flow can be predicted with sufficient approximation to allow the manipulation of the reservoir in accordance therewith to a certain extent, so that the reservoir may be held empty or partly so until the peak of the flood season has passed and its maximum function thus made available for flood regulation. After the danger has passed, the reservoir can be closed and the receding wave of the flood season stored for industrial uses, but there is always considerable uncertainty about any season in any country, and in many regions it is unsafe to trust any possible predictions as a flood may occur without warning almost any time of the year, and any reservoir capacity designed chiefly for flood regulation must be kept available for this purpose at all times.

It is feasible, however, in many cases to construct a reservoir with a portion of its capacity devoted entirely to industrial storage and another portion of the reservoir devoted to flood regulation. Such a plan requires that storage be ceased at a certain point on the reservoir outlined so that the remaining capacity may be available for regulating floods, and as the extraordinary floods come only at long intervals the great area which would submerge in such a reservoir may remain available for agricultural purposes, and so long as they are not filled with costly improvements, the great floods occurring at long intervals may do little or no damage. Unless they come in the growing season they do no damage, and would at worst, merely injure or destroy one crop in, say, 10 or 20 years.

All these considerations show conclusively that to perform all of the functions that a storage reservoir might perform and to take into consideration all of the interests and the benefits that ought to be considered, these problems ought all to be handled by one authority so that the works may be planned and carried out to the best advantage and with the greatest expedition and economy.

In some cases, as I stated, there are incidental benefits in flood protection that go with, or accompany without extra expense, construction for irrigation, but there is an antagonistic principle in a reservoir used primarily for water storage and one used for regulating floods. The principle of a storage reservior is, so far as possible, to keep that reservoir full except when water is needed for use. The principle of a flood regulation reservoir is to keep it empty, as far as possible, so that it will be available to regulate the flood when it comes unexpectpectedly.

Senator **Newlands**. Before you begin your statement I would like you to preface it by stating your occupation and experience with reference to hydraulic engineering, outside of the Reclamation Service, as well as in it—what positions you have held.

Mr. DAVIS. I have been in the Government service about 34 years. The first 20 years of that period, about, was in the Geological Survey, first as topographer and afterwards as hydrographer in measuring streams, selecting and surveying reservoir sites and other hydrographic work preparatory to the irrigation work. On the passage of the reclamation act I was transferred to the irrigation work under the provisions of the reclamation act of 1902, and for about 14 years have been in that work.

Senator NEWLANDS. You were chief engineer for many years, were you not?

Mr. DAVIS. Yes, sir; since 1907—for the last nine years.

Senator NEWLANDS. And are you chief engineer now?

Mr. DAVIS. Yes, sir.

Senator NEWLANDS. And director?

Mr. DAVIS. Yes, sir. In connection with that work I was detailed at various times to other works in the investigation of the Panama and Nicaragua Canals; I was in charge of the hydrographic work on both of those investigations for the major part of about four years. I made examination of the irrigation water supply in Turkestan, the Russian Empire, and for flood control in China, being a member of the board of conservancy in 1914 that spent about four months in China solving the flood problems in the Huai River and the Yellow River Basin.

Senator NEWLANDS. By whom were you employed for that service?

Mr. DAVIS. By the American Red Cross, at the instance, however, of the Chinese Government.

Senator NEWLANDS. And upon what commissions have you served with reference to Panama, etc.?

Mr. DAVIS. I have never been a member of the Panama Canal Commission. I was chief hydrographer of the two Walker commissions and later served on a board of consulting engineers with reference to the Gatun Dam in 1909 and more recently on a committee appointed by the National Academy of Science, at the request of the President, to consider the problem of slides.

Senator NEWLANDS. Are there any other matters of importance in which you have acted as consulting engineer for Governments?

Mr. DAVIS. I believe I have mentioned them all for Governments. I have had some brief private connections. I was consulting engineer for a high dam in Alaska for a private enterprise, and I have been on numerous high dams in this country for private enterprises—in California, Washington, and North Carolina, and in various other parts of the country.

Senator NEWLANDS. At whose instance was this work in Turkestan done?

Mr. DAVIS. That was done at the instance of the Russian Government, but the expedition was financed by New York capitalists.

Senator NEWLANDS. And your work in China was in what connection?

Mr. DAVIS. The amelioration of flood conditions. The periodic floods, at irregular intervals, have been the curse of that country for a very long time, killing hundreds and thousands, and even millions of people some years. Of late they have been more directly brought to the attention of the western people, because we have been more closely in touch with the Orient. The Red Cross was called upon in recent years to contribute to the alleviation of the misery of the people who were starved by the ruination of their crops, and finally conceived the idea that engineering work might assist in ameliorating those conditions, and investigated the subject for that reason.

Senator NEWLANDS. Who were your associates in that work?

Mr. DAVIS. The chairman of the committee was Col. (now Gen.) Sibert, formerly in charge of the Atlantic division of the Panama Canal; the other was Prof. Meade, of the University of Wisconsin. The report on the Chinese situation is available.

Senator NEWLANDS. Will you give a general idea, as briefly as possible, regarding the general work of the Reclamation Service as demonstrating the range of your experience in hydraulic problems?

Mr. DAVIS. The Reclamation Service has been from the first engaged upon the survey, construction, and operation of irrigation work in the West, with the incidental problems of drainage and other hydraulic problems that go with that primary purpose. The net expenditure to date, on construction are approximately $100,000,000, and perhaps two-thirds of that has been expended in the construction of diversion dams and canals and distribution systems and drainage works and other things, and probably one-third, at a rough estimate, in large storage reservoirs. In that connection we built about a dozen very large reservoirs and numerous small ones. The two highest dams in the world are among the constructions under this law—one in Idaho and the other in Wyoming.

Senator NEWLANDS. How many acre-feet have you been able to store in all those reservoirs?

Mr. DAVIS. The capacity of the reservoirs now constructed—the combined capacity—is over 10,000,000 acre-feet.

Senator NEWLANDS. That would mean that the water would cover 10,000,000 acres 1 foot deep?

Mr. DAVIS. Yes, sir; water that they would hold.

The CHAIRMAN. How much land would that irrigate for agricultural purposes?

Mr. DAVIS. You mean the stored water?

The CHAIRMAN. Yes.

Mr. DAVIS. The stored water, should it be full, would irrigate between two and three million acres of land, but some of those reservoirs—for example, the largest one on the Rio Grande, is a reservoir that will not fill every year. That is a stream of very erratic regimen and some years has very little surplus water in it; in other years it has a very large amount, so that the reservoir is obliged to hold an immense discharge of the exceptional years for the low years when it can be used. It also has a surplus capacity on account of the storage of the mud which it will be necessary to sluice out.

The CHAIRMAN. Taking the normal years, how many acres of land would you say could be irrigated with the works that you now have practically completed?

Mr. DAVIS. We are able to-day to deliver water for irrigation to about one million and a half acres. The completion of the projects in construction, and those that have been completed, all together will irrigate nearly three million acres.

The CHAIRMAN. How much did you say had been expended up to date?

Mr. DAVIS. In the neighborhood of $100,000,000.

Senator NEWLANDS. Your work has covered about 23 projects, I believe, in some 15 or 16 States?

Mr. DAVIS. Fifteen States; yes, sir.

Senator NEWLANDS. What large watersheds has your work covered?

Mr. DAVIS. We have very few navigable streams in the West, in the true sense of the word, at least that we have operated on. The largest and most important navigable stream——

Senator NEWLANDS. I refer to the headwaters of course.

Mr. DAVIS. We have done work on the headwaters in the Missouri River Basin, the Colorado River Basin, the Columbia River Basin, the Rio Grande, and the Sacramento. That is all the navigable streams. Then we have also worked in the great interior basin where there are no navigable streams, and in the Klamath.

Senator KENYON. Was that work on the navigable streams done to control floods?

Mr. DAVIS. No, sir; it was done to develop irrigation.

Senator KENYON. This project that is before us is an irrigation project, is it not?

Mr. DAVIS. No, sir, only in part.

Senator KENYON. It is to control the waterways and floods that come into the rivers?

Mr. DAVIS. Yes, sir.

Senator NEWLANDS. It includes irrigation, however, as one of the forms of flood control.

Mr. DAVIS. For example, in the Missouri River Basin we have constructed reservoirs with an aggregate capacity of 2,362,000 acre-feet, of which about one-half is on the North Platte, and that practically controls the ordinary flow of that river. It has some effect on the maximum flood flow of the Belle Fourche River in South Dakota, the Shoshone in Wyoming, and the Milk River in Montana and the Sun River in Montana.

Senator NEWLANDS. Are they tributaries of the Missouri?

Mr. DAVIS. Yes, sir.

Senator KENYON. I would like to get clear in my mind the proposition that we are interested in of combined irrigation and flood control. Flood control by means of reservoirs—that is the water that will be held to be used for irrigation purposes also, is it not?

Mr. DAVIS. Yes, sir. We have, however, one reservoir that is built for the double function of storage and flood control. I have a picture of that dam here [indicating]. It is on the Rio Grande in New Mexico. At the left of the picture is the spillway where the excess waters spill over after the reservoir fills, and under each bay you will find a discharge pipe that is controlled by valves.

Senator KENYON. Now, as to the Missouri and Mississippi—the upper Missouri—what has been the plan as to that? Can this same plan be put into operation with respect to the Missouri?

Mr. DAVIS. There are streams tributary to the Missouri that can be controlled by storage reservoirs. As far as the Missouri itself is concerned, I am not sufficiently informed. That is east of our operations. That is the main stream.

The CHAIRMAN. Have you had any experience as to the Mississippi?

Mr. DAVIS. No, sir; I have never worked on that at all.

The CHAIRMAN. Do you know where the flood comes from that causes the disasters on the lower Missouri, say, from Kansas City down, and on the Mississippi, say, from St. Louis down to the Gulf? Where do those waters come from that cause all that trouble?

Mr. DAVIS. I have not given that the detailed study that some engineers have. I know, though, that some of the floods—whether the major portion or not I do not know—but some of the floods are caused by rainfall in the humid region, and I think the greater portion of them are.

The CHAIRMAN. Just what region is that?

Mr. DAVIS. It is east of the region where we are operating. We are operating in the arid region.

The CHAIRMAN. It is east of the region where you have been working?

Mr. DAVIS. Yes, sir. The one hundredth meridian is, roughly speaking, the dividing line between the humid and the arid regions. A large volume of water comes from the arid region from the melting snows in the mountains. It is not as large as the amount that comes in at exceptional times when these great floods occur, but being controlled, of course, would have its effect.

Senator KENYON. What plan of control could there be for that region that you call the humid region? The flood control of the source would not affect that, would it?

Mr. DAVIS. It would affect it some. It would affect the smaller streams. The effect, of course, on any stream would depend on the extent to which the work was carried out, and it is conceivable that enough storage could be inaugurated to affect it some and noticeably. What percentage I am not able to say, and I do not think anyone is.

Senator KENYON. It would have to be carried out as a complete system. It would not be of much use if it was a halfway system?

Mr. DAVIS. There is no question as far as that is concerned. It is impossible to solve the problem of flood control by storage alone; nobody can do that; but whether as a contribution to the solution of the problem and to what extent storage is a contribution to the control problem is a question that I do not think anybody can answer exactly until investigations are more complete than they are now. There are some streams on which storage can contribute materially to the regulation. The one that I showed you, the Rio Grande, has had in the past very destructive floods in the lower part. The reservoir will absolutely control that—there is no question about that in my mind—down to the next big tributary, which would of course cut the influence of this reservoir down in proportion, but I think where damage has occurred in southern New Mexico this will prevent destructive floods.

Senator KENYON. What does the reservoir cost?

Mr. DAVIS. About $5,000,000 which is expected to be paid back by the irrigated land.

The CHAIRMAN. You have been doing some work on the headwaters of the Sacramento. I suppose storage would have the effect of controlling floods there, would it not?

Mr. DAVIS. It is possible to contribute materially to the control of the Sacramento by storage. Considered alone for the purpose of flood control, that is not the cheapest way, but when combined with other possibilities for the use of the water by power and irrigation, my humble judgment is that storage is an important factor in the solution of the problem, though not the most important factor. Other measures, enlargement of the channel, levee protection, and by-passes are also necessary. That will cost more but the total benefit will be larger. It has been estimated, I think with a fair degree of approximation, that for the control of the Sacramento River, between Red Bluff, which is the point where the river leaves the mountainous region, to the mouth of the Feather River, the first large tributary below, making it about 50 per cent of the problem—the flood control can be solved by storage. Below that point, of course, that percentage drops off rapidly. An engineer who reported to me on the subject gave it as his opinion that even at the mouth, 10 per cent of the cost of other works might be saved by the proper utilization of the storage possibilities on that River. That is, of course, largely guesswork. There has been no very complete investigation of that part of the river.

The CHAIRMAN. Are there any serious flood problems on the Snake River, a tributary of the Columbia, which may be aided by storage?

Mr. DAVIS. Not serious in the sense of destruction of property. The Columbia is a very large river, and there is no storage possible on that river that I know of which would materially affect the flood heights.

Senator NEWLANDS. How about Snake River, the tributary?

Mr. DAVIS. The Snake is an important tributary to the Columbia, but the Columbia is so much larger and discharges so much water that, as far as I am aware, the flood heights of the Columbia could not very materially be cut down by storage.

The CHAIRMAN. How about controlling those awful disastrous floods on the Colorado by storage?

Mr. DAVIS. I think the solution of the Colorado problem can be contributed to by storage to a large extent. It can not be entirely solved by that. It will always be necessary to build protective works and channel control.

Senator NEWLANDS. You estimate the irrigated area just as a storage reservoir, do you not?

Mr. DAVIS. The irrigated area serves as a storage reservoir and is improved up to the point where it goes. The percentage of water actually applied to land, when compared to the volume of the great floods, is naturally small. In some exceptional cases it is considerable, but usually it is small. It is, of course, a very effective means of storage because even the water that is applied in excess returns slowly to the streams in subterranean passages and surface drainage, and when it is applied at a time of great flood, of course it reduces the flood to the extent that it is applied.

Senator NEWLANDS. Have you any question but that irrigation itself will be more extensively used in the humid region than it has been in the past?

Mr. DAVIS. I believe eventually it will, but experience in the past history of this country has not been very encouraging in that line. That is illustrated by the irrigation enterprises that have been carried out in the semiarid region—Nebraska, Kansas, Oklahoma, the Dakotas, where it is a demonstrable, actual fact that irrigation is a financially good investment. The fact that they usually get a considerable rainfall, and frequently get enough rainfall, leads to the neglect of irrigation works after they have been built, and experience actually shows they have been abandoned. But I believe the time will come when they will be restored and irrigation carried out in the semiarid region as it is in such regions in Europe, Asia, and Africa.

Senator NEWLANDS. It is carried on there, even in the humid region, is it—intensive cultivation?

Mr. DAVIS. Yes, sir; in regions that we would call humid here. The Po Valley has a greater rainfall than any part of Kansas or Nebraska, and yet they irrigate extensively, at high cost.

Senator NEWLANDS. Have you any doubt that under a perfected system of agriculture which would involve the use of waste waters for intensive cultivation in the humid region, as well as in the arid region, that works could be constructed and used beneficially in such way as to materially mitigate the destructive effect of floods?

Mr. DAVIS. That depends very largely on the definition of the word "materially."

Senator NEWLANDS. Well, as to the effect?

Mr. DAVIS. Well, it would effect some mitigation, but not a very large percentage. One trouble is, that at the time of great floods, which means times of heavy rainfall, the application of water artificially is not required, and would not be made under a number of conditions. There, of course, might be floods caused by rainfall in one part of the basin when water would be applied in another part of the basin, but the water would not be applied in the same region where the flood originated, because of the excessive rainfall causing flood obviating the necessity of irrigation.

The CHAIRMAN. You stated that you had about a million and a half acres of land that are now susceptible of being irrigated by the works that have already been completed?

Mr. DAVIS. Yes, sir.

The CHAIRMAN. And that when you had the work which is now under way completed, you could irrigate about 3,000,000 acres?

Mr. DAVIS. Yes, sir.

The CHAIRMAN. What is the estimate to complete these works that you now have under way?

Mr. DAVIS. About $70,000,000.

The CHAIRMAN. Have you made any careful estimate of the amount of land which you think must be irrigated in the arid region?

Mr. DAVIS. I have made a number of attempts, but the information is not sufficiently complete to make any close estimate; and it is also full of doubts about the feasibility as to cost. Of course, if we take off the lid and make no limit, of cost, the acreage is very large, but when we try to hold it within the limits of possible cost and what would be the value of the land to farmers when they move on it, it cuts it down very greatly, and it is the lack of information on that subject which is one of the most serious obstacles to making a valuable estimate of the possible area of irrigable lands. I believe that somewhere between thirty and fifty million acres, total irrigated land in the arid region, would be as close an approximation as we could make.

The CHAIRMAN. You mean that many acres can be irrigated?

Mr. DAVIS. Including what is already irrigated; yes, sir.

The **Chairman**. Including what is irrigated by private persons as well as by the Government?

Mr. **Davis**. Yes, sir.

The **Chairman**. About how much have private persons irrigated there?

Mr. **Davis**. They are irrigating now, as I remember it, between eleven and twelve million acres.

The **Chairman**. And the Government will have three?

Mr. **Davis**. Yes, sir.

The **Chairman**. So that would be something like fourteen or fifteen million?

Mr. **Davis**. Yes, sir.

The **Chairman**. What is the average cost of this land that has already been irrigated by the Government?

Mr. **Davis**. You mean the charge the Government is making?

The **Chairman**. No; not the charge, but what has it actually cost the Government to irrigate this million and a half acres, per acre?

Mr. **Davis**. We have expended approximately $100,000,000, but that includes some incomplete works that will be utilized in the completion of the projects. If I remember aright, our average cost is about $55 per acre.

The **Chairman**. And to complete the works you say would cost about $70,000,000 more?

Mr. **Davis**. Yes, sir.

The **Chairman**. So we would have, in round numbers, 3,000,000 acres costing $170,000,000 when you get these works completed that are now under way?

Mr. **Davis**. Yes, sir.

Senator **Newlands**. Take the Sacramento River—you are familiar with the work that is going on there now with reference to river regulation, are you not?

Mr. **Davis**. I know something of it; I am not familiar with it.

Senator **Newlands**. What, in your judgment, would be the best method of taking hold of that river comprehensively so as to put the flood waters to beneficial use, promote navigation, and mitigate the floods and the destructive effect of the floods?

Mr. **Davis**. That is too comprehensive a question for me to answer. I can not criticize the plan; I am not sufficiently informed on the project to criticize the plan. I could say in a general way that I am satisfied from what I do know that a wiser plan than that now being followed to handle that river would be to have all the construction affecting water supply under one control, so that the question of power, of irrigation and of flood control and drainage, and everything that affects the water supply or control would be considered altogether. So that the proper program when all these things are considered would be followed. My information is that the question of storage being a regulation of the flow of the river is being ignored by the present management there because they have no authority to use the stored water, I mean it is ignored in a sense that it is neglected as not being necessary or advisable to undertake for flood control—because it costs too much tor that purpose. But if they had authority to estimate and undertake the irrigation of the land and estimate its value for that purpose, probably it would change their attitude toward this storage question.

There are many uses for stored water of a commercial character that would contribute to the solution of the problem. I think it is undoubtedly correct that as a feature or flood control alone it is not profitable to store water in that basin and that is the conclusion that I think is being followed. But I could not offer any specific criticism of the plans that are now being followed in connection with that because I am not sufficiently informed.

Senator NEWLANDS. But you do feel that the storage, water-power development, and irrigation should be regarded as factors in the regulation of that river?

Mr. DAVIS. Yes, sir; and I have no doubt they would be if the present authorities had their authority extended to take in those subjects. The same is true with respect to some of the other rivers.

Senator NEWLANDS. Is that true of the Columbia and the Snake?

Mr. DAVIS. Well, I do not think there is any serious flood problem on the Columbia and Snake. I do not know of any very serious problem. There may be small ones.

Senator NEWLANDS. Taking up the question of navigation and the general utilization of those two rivers, do you think that all those subjects should be considered and coordinated?

Mr. DAVIS. They certainly should be; there is no question that they should be coordinated there as well as everywhere else. I do not think, however, that the question of storage enters into the problem of the proper use of the Columbia to any such extent that it does with the Sacramento, for example, or of the Colorado. There is an immense supply of water in the Columbia already as there is in the navigable portion of the Snake, and any regulation that can be accomplished on those rivers by storage has very little effect—I presume no perceptible effect—on the navigation feature or upon any flood control that may be necessary or desirable there.

The CHAIRMAN. What would you say about the effect of storage or flood control on the Mississippi River?

Mr. DAVIS. My information is not sufficient to enable me to give a conclusive answer to that question, but my impression from what I know of it is that it would be a small element.

The CHAIRMAN. Very small, would it not?

Mr. DAVIS. Yes, sir.

Senator NEWLANDS. You mean storage?

Mr. DAVIS. Yes, sir; storage.

Senator KENYON. It would be so small that it would not be worth while?

Mr. DAVIS. No, sir; I do not think that is true. I think the question should be considered and all of the uses of the water and all of the reasons for its control should be considered when a plan for its control is made.

Senator NEWLANDS. Do you believe that the water should be studied not only with reference to preventing destructive effects but also with a view to promoting its beneficial uses and making it a creator of wealth?

Mr. DAVIS. By all means.

Senator NEWLANDS. With that view, what is your judgment regarding the coordination of these various water developments on the Mississippi River and its tributaries?

Mr. DAVIS. I think that is very important. I think all the water interests, drainage, flood prevention, power, irrigation, navigation, and every other use to which water can be put and every purpose for which the river is regulated ought to be considered at once by an authority centralized under one head.

Senator NEWLANDS. Do you think that the system that has been pursued in the past in detail work by various services, by various individual districts on the river as to water treatment, is not the wisest course?

Mr. DAVIS. Not in my opinion. One illustration of that is the fact that with private and district enterprise a great deal of work is being done in the drainage of swamps in the Mississippi Basin; nobody can deny that so far as they have any influence the drainage of those swamps is increasing the flood problem of the lower river, because it is destroying the natural reservoirs. It is entirely possible, and I think almost indisputable, that some of those swamps ought never to be drained, but ought to be improved as reservoir sites because of their value in regulating the flow and for all those various purposes.

The CHAIRMAN. Could you suggest where some of this could possibly be done?

Mr. DAVIS. No, sir; I am only speaking from general knowledge; but where it is wise to drain a swamp that should be done with the full knowledge and realization of its effect upon the river and a full consideration and decision of the question whether it is wise. That has not been done up to the present time. There is no authority in anyone sufficient to do that, so far as I know.

Senator NEWLANDS. Take the drainage of the swamp land of the upper reaches of the Mississippi River and its tributaries, that tends to accentuate the flood question below, does it not?

Mr. DAVIS. Yes, sir; it has that tendency.

Senator NEWLANDS. Wherever those natural reservoirs, therefore, are done away with by artificial methods, is it not very wise to study the problem of substituting other artificial methods of holding back from obstructing the waters so as to reduce the flood heights?

Mr. DAVIS. It is very proper to consider it. It may not be wise in many cases, but the question ought not to be dismissed with a prior assumption that it is not wise.

I want to make an illustration of that. Prof. Mead, who was associated with me about six months on the Chinese problem, was a member of the board considering the flood problem in the vicinity of Dayton, Ohio, and he is a very able engineer. He said that his board started in with the consideration of the various methods of ameliorating the floods by straightening the channel, widening it, and building levees and otherwise providing for the quick discharge of the great floods as they came, and that the suggestion was made of storage, and the board was unanimous in the opinion that storage was a negligible factor. They had no difference of opinion on that subject, but, being men of candor and thoroughness, they concluded they ought not to dismiss the question without investigation. They made an investigation which promised sufficiently to justify their ordering more serveys, and finally when they made their report, it was almost entirely in favor of storage. They find that they can confine those floods with a few minor rectifications of the channel below. They can control the maximum flood by storage for perhaps one-third of the money that would be required by other means that they investigated, and they came to that conclusion in absolute contradiction of their prior deep-seated conviction.

The **Chairman**. Are those to be permanent reservoirs or for the temporary holding of water?

Mr. **Davis**. Yes. Permanent high dams; reservoirs of large capacity. The control of floods by such means is a different problem from what it is when you propose to hold water for use. Those reservoirs are built with permanent outlets so that the water begins to flow out as soon as it begins to flow in. But those outlets are made of such size that only a given quantity of water can flow out, and when the reservoir fills the outlet is discharging the maximum amount that can be discharged without injury to the lower stream. Then, with those outlets discharging the reservoir is emptied, and it is valuable for cultivation or any other purpose, and as those great floods occur at intervals, the large part of the land in this reservoir, which is valuable and fertile, can be used, and will be used, for agriculture. The only material modification required in its handling is to prevent the construction of costly improvements that would be ruined by floods. The floods frequently come before the agricultural season begins, and even where they do not their only damage is, perhaps, to kill young crops.

The **Chairman**. And they want absolutely permanent reservoirs that would hold water temporarily, so that in such years they could make a crop with that?

Mr. **Davis**. Yes, sir; perhaps 9 years out of 10.

Senator **Newlands**. Have you any idea of what the total cost is of the development contemplated on that river? What river is that, the Miami?

Mr. **Davis**. Yes, sir; there have been a number of plans and alternatives suggested. The one that I have in mind was $17,000,000.

Senator **Newlands**. Is that being done by State or private enterprise?

Mr. **Davis**. It is district. They have secured State legislation and organized a district.

Senator **Newlands**. In any general comprehensive scheme for river regulation with a view of not only preventing the destructive effect of the waters, but turning water into an asset, do you deem it wise to establish a system of cooperation between the Nation and the States and individuals that may be engaged in work of this kind?

Mr. **Davis**. Yes, sir; I do. I think that local interests should be employed so far as it is possible to do so, and to the extent that it is a local question. National activities are proper and necessary where the problem is interstate and where the benefits are interstate, but I believe that the authority which should handle all these hydraulic questions should cooperate with the local interests and require cooperation in such case as justice demands.

Senator **Newlands**. Have you in the Reclamation Service been able to establish in the various States any system of cooperation?

Mr. **Davis**. Only in connection with surveys and investigations. There has been cooperation to the extent of legislation favoring our work and in making investigation, but not in the construction work.

Senator **Newlands**. But you find it is possible to inaugurate a system of cooperation with States and communities?

Mr. DAVIS. I believe it would be. I have no doubt that it would be.

The CHAIRMAN. Before you leave that, I would like to ask whether you know anything about the plans at Columbus in connection with Sandusky. I was under the impression that there were joint schemes there by which they hoped to control the floods.

Mr. DAVIS. I am not informed on that point. There is a small project proposed at Erie, Pa., for controlling the floods of the small stream there by means of a storage reservoir.

Senator NEWLANDS. Now, if we can control in a measure the flow of water on the Miami, is it not also conceivable that it is practicable on the Wabash and other rivers?

Mr. DAVIS. It is conceivable, certainly, but not necessarily true.

Senator NEWLANDS. But the probability is that some method will be found, just as has been found on the Miami. Do you not think so?

Mr. DAVIS. It varies with streams. I think the probabilities are—it would only be a guess—that the majority could be so controlled, but the control of floods requires such a large storage capacity. The topography has necessarily to do with that. The eastern portion of the United States, outside of the system of Great Lakes, is not as well provided with natural storage sites as the western part, and it has more water to control. We have magnificent reservoir sites in some parts of the West, one of which controls over 2,000,000 feet of water. I do not know of any such reservoir site in the East at all.

There is a stream that was investigated in the headland of the Little Tennessee, where they have spent nearly $300,000 on investigation, and they have a complete topographical map of the basin, as well as extensive stream measurements, and they have not anything in that basin that we in the west would call a reservoir site which could be possibly used for irrigation on account of its not having sufficient capacity, yet they planned and will build 11 high dams in that basin. One is under construction now.

The CHAIRMAN. That is for power, is it not?

Mr. DAVIS. Yes, sir; and all have more or less storage. They use the upper part for storage, but the capacity is small, relatively, and its influence on the floods, when they construct those 11 dams—and each one will be used somewhat for storage—will be, I venture to say, negligible or, at any rate, very small.

Senator NEWLANDS. How many rivers in Ohio are there that are feeders of the Ohio on the north?

Mr. DAVIS. I could not tell you how many without reference to a map. When you have fully investigated the storage possibilities on all of the streams east or west, you always find that there is a large area below the reservoirs that is not controlled, unless you can find one way down at the mouth of the main stream, and that has never occurred in my observations, and if you put a large storage reservoir at the mouth it does not do any good, for there is nothing below for it to protect. Take the Rio Grande, where I pointed out that the flood control is practically secured by the work of the Reclamation Service. There are about 25,000 square miles of territory tributary to that reservoir. The flow into that reservoir can be controlled by the reservoir, so that it will never discharge below that dam to exceed 8,000 cubic feet per second; but there are tributaries below, usually dry, that when floods are in fashion in that country carry a large quantity of water. So in order to protect the valley it is necessary to shut off the water entirely at the dam, because the streams below furnish all the water the river can carry. We have that problem everywhere. In the humid region it is very important, because there are heavy rainfalls. There is rainfall in the Mississippi Valley in an enormous quantity below any reservoir site that I think there is any prospect of finding. But, although storage is limited, it ought always to be considered. It is sometimes very important and sometimes of slight importance in flood control, but for commercial purposes it is paramount. The regulation of the river is very important to navigation and power and for any purpose that water is good for.

Senator NEWLANDS. Assuming that it will be impossible to store in artificial reservoirs any considerable part of the flood flow, do you or do you not regard it as practicable by studying every device—not only storage, but intensive methods of cultivation, forest promotion, and construction of reservoirs for the development of power and other devices—to so obstruct the flow of the water as to eventually diminish the possible flood height of these streams?

Mr. DAVIS. Oh, yes; I think unquestionably that subject ought to be exhaustively examined for every stream. For tributaries like the Miami and many other tributaries of that size, the regulation of the river and these other artificial means that you can employ are in some cases paramount and frequently important and certainly ought to be studied for every stream. I do not think we have any right to dismiss the subject any more than anything else we do not know about—just as the Miami Conservancy Board concluded that it had no right to dismiss the subject of storage until they made an investigation, and when they made an investigation they found that was paramount and a solution of the problem, and that may be true in other cases.

Senator NEWLANDS. If they can find a similar solution of, say, one-half of the tributaries of the Ohio, it would go a great way toward controlling the height of the Ohio itself, would it not?

Mr. DAVIS. That would depend upon the proportion they bore. If you could actually stop one-half of the flow of the Ohio River it of course would make a very important contribution, but that is not likely. I presume if sufficient attention were given to the other tributaries like the Miami Basin, for example, some contribution to the storage might be figured out that should be expected from flood control, just like other interests. I am not able to speak with any certainty upon that point.

Senator NEWLANDS. You spoke of the value of cooperation between the nation and the States and the communities in the development of waterways. What do you say with reference to the value of the workings of various scientific services, which relate in any way to water, into coordination? Do you believe it best for the settlement of this whole question of river investigation and development that a single service should be created like the Corps of Army Engineers, or would you deem it best to avail yourself of the accumulated experience and the services of existing bureaus and services of anybody engaged in the study in the various districts of the water question?

Mr. DAVIS. I do not think those two propositions are necessarily antagonistic. It is possible to combine all these services that have experience in this one department; that is, assuming that Congress is willing. I do not know whether such a bill could be passed, but if it could, that would combine the virtues of a single centralized authority and of the accumulated experiences of existing bureaus. But the nearest approach that seems likely to be realized at the present time without upsetting the organizations of the present departments is the bill that is now under discussion, where a board representing the different departments has full power and can distribute and control the expenditure of the appropriations made for these purposes and can consider all of the problems that enter into river control in arriving at a proposition and adopting a proper program.

Senator NEWLANDS. Do you think that system of coordination through a departmental board of that kind is practicable?

Mr. DAVIS. Oh, yes; I think so.

Senator NEWLANDS. Will you state what the result of the conference—that recently held with various services and boards in the Government service upon this subject—was with reference to Senate bill 5736?

Mr. DAVIS. We had a conference with reference to Senate bill 5736 in this city yesterday, and in the conference was represented the various bureaus the coordination of which is aimed at in this bill, with the exception of the War Department. Gen. Marshall, formerly Chief of Engineers, was a member of the conference. He is now consulting engineer to the Secretary of the Interior.

The conference was unanimous in concluding that the coordination was a very desirable and a very important end to be accomplished, and that the provisions of this bill in organizing a water control board would accomplish that coordination, and they agreed with the bill in general, with the exception of the appropriation of $60,000,000 in the first paragraph, which, for various reasons, some members objected to. One reason given was that it could not be passed; another reason was that it should not be passed because it was believed that large appropriations for construction to be carried out under this board should await the recommendations of the board, the coordination of the existing information on the subject and its consideration by the board that is going to be responsible for results. It is my opinion that in order to hold the board absolutely responsible for results that program should be followed. Whether it is more important to do that than it is to delay the work a little of course is a question for Congress, but it seems that not sufficient weight has been given to the recommendations of the Engineer Department in the past and by making the appropriations for certain work before the authority that is to expend an appropriation, is a move of the same character and is destructive of responsibility.

Senator NEWLANDS. Would you apply that to all the various items of this bill—take the first item, which is as follows (reading):

> (a) $25,000,000 to the Illinois River and its watersheds and to the Mississippi River from the mouth of the Illinois to the Head of the Passes, including the Atchafalaya River as one of the mouths of the Mississippi River, to be expended for the improvement of the Illinois River and for continuing the improvement of the Mississippi River from the Head of the Passes to the mouth of the Illinois River, for the control of floods thereon, and the establishment of a waterway from the Lakes to the Gulf;

Mr. DAVIS. I could only refer to those as a matter of principle. I am not able to say that those appropriations are not wise, as intended for the regions to which they are applied in the bill, but they are in very round numbers, and it does not look to me as though they were careful estimates of what was required for specific purposes in those basins, and that those specific purposes are absolutely desirable.

The investigations of these various river basins now in existence have been made by various bureaus, and I do not know of any engineering recommendation which coincides in all particulars with this bill in the distribution of the fund, nor do I believe that this bill coincides exactly with what that board would recommend after a year's investigation. I can not say that it does not, but it does not look to me plausible that it would.

My belief is that the majority of well-informed engineers would differ among themselves upon that point, and the constitution of such a board as this, if properly constituted, would give a means by which differences of opinion could be thrashed out and the wisest course adopted. That is the theory of the bill, and it would be better, I believe, to employ it for that purpose instead of prejudging the case and laying out the work for them before they have had a chance to make recommendations.

The CHAIRMAN. Do I understand that you favor any specific appropriation?

Mr. DAVIS. Yes, sir; we concluded that about $1,000,000 would be sufficient for the organization of the board, the carrying out of the organic act, and the first year's investigations. That is, the investigations that would bring together the scattered data, supplement it, if necessary, and carry it on where necessary to keep it up to date. At the end of the year for which that appropriation was made the board itself would be in shape to recommend what appropriations for construction should be made, and their recommendations ought to be received before the appropriation is made in any large amount, I believe.

Senator NEWLANDS. Is it your opinion that investigations in the past have been made in a detached way by various services, which, if brought together, would constitute a very considerable part of the work of investigation that would otherwise have to be undertaken in reference to these watersheds?

Mr. DAVIS. Oh, yes; an immense amount of data, topographical maps, surveys by the War Department, rainfall observations and river heights by the Weather Bureau, stream measurements by the Geological Survey, and a vast amount of existing data that ought to be brought together by skilled engineers who would know how to consider its value and weigh all the possibilities in connection with the existing information. And unless that is done prior to the distribution of the funds, it may lead to unwise investment.

Senator NEWLANDS. Can you state what the different phases of the water question are that have been covered by the various services that took part in this conference?

Mr. DAVIS. The Reclamation Service is engaged in storage of water in the arid regions covering 15 States.

Senator NEWLANDS. You use the term "storage" I observe. That is not the only thing?

Mr. DAVIS. No; but I have already expanded on that is the reason I did not. Storage and diversion, application to irrigation, drainage, and various other functions pertaining to the Reclamation Service. The Weather Bureau has for a long time——

Senator NEWLANDS. The reason I called your attention to that, Mr. Davis, is that those who have been opposing that bill have always emphasized the utter impossibility of storing enough water to affect the floods, whereas the friends of the bill insist that the purpose of the bill is to obstruct the flow of these waters when they fall from the heavens by every possible device and put those waters to some beneficial use on their way down to the Gulf and the oceans, and I call your attention to that word "storage" because I am sure if it is the prominent word always to the exclusion of everything else, it will be fastened on by the opponents of this bill as an indication of the utter folly of attempting to bottle up enough flood water to affect the destructive results of floods?

Mr. DAVIS. The Weather Bureau has for many years been taking observations of rainfalls extensively, and of the other feature of the weather, wind, etc., and has also observed river heights for many years, on a great many of the streams.

Gen. Marshall, consulting engineer to the Secretary of the Interior and the former Chief of Engineers, and in both of these capacities, has had charge of extensive work of river control in all its features. The Commissioner of Lighthouses is in charge of the bureau which has the construction of lighthouses and other safeguards to navigation, and that bureau has had a very extensive experience in construction of that character.

The Bureau of Plant Industry has for many years studied the distribution of plants and the introduction of new ones, and of course, incidentally in the irrigated country, the application of water to the growth of those plants, how much they require and at what times. Everything of that kind.

The Forest Service, which was represented by its chief in this conference, has the supervision of the national forests and is extensively called upon for advice in private forests and in reforesting of denuded lands. The relation of this subject in the influence of forests and in the retardation of floods. Mr. Hall of the same service was present at the conference.

Dr. George Otis Smith, Director of the Geological Survey was present. The activities of the Geological Survey relate extensively to the problems we are considering. First, geologists are serviceable in determining the holding capacity of reservoirs, dam sites, etc., designed for the storage of water and determining underground waters, their direction, quantity, etc. The topographical maps which have been made in the last generation by the Geological Survey are perhaps the most important fundamental information that is needed for an extensive, comprehensive consideration of this problem, such as contemplated by this bill.

Another branch of the Geological Survey has engaged for many years in the measurement of the streams, which is a very direct factor in all these problems.

Mr. Bowie, representing the Coast and Geodetic Survey has had long experience in that service in the Coast and Geodetic Survey, engaged in coast triangulation and topographic and interior triangulation, has to do with the control of the topographic work I have spoken of as being one of the important factors.

Dr. Whitney, the Chief of the Bureau of Soils, was present at the conference, and the Bureau of Soils has for one of its functions the study of drainage and also for another of its functions the study of soil erosion. In preventing the destruction of valuable lands, we find one of the most important functions that the board contemplated by this bill would be concerned with. We speak about the destruction by overflow from rivers, but that probably in the aggregate is small compared with the insidious very widely distributed destruction of the soils by surface erosion and by the caving in of river banks in rich alluvial valleys. Those subjects could be considered and ought to be considered by such a board as we find provided for in this bill.

Senator Newlands. Have you ever made a study of the effects upon the channel itself of the construction of high levees upon each side of a stream like the Mississippi River?

Mr. Davis. No, sir; I have never made any particular study of that subject. I have read somewhat on the subject.

Senator Newlands. Is it likely to tend to a fixed channel or to a shifting channel?

Mr. Davis. Well, the construction of levees alone, I think, has little influence upon that. If a far-sighted, comprehensive policy is carried out, probably great improvement in the scouring of the rivers would result. By that I mean the extensive construction of revetments which would stop caving banks, which undermine levees, and the preservation of levees in that way.

The usual employment of the levee system, the only one Congress has yet authorized I believe, is simply the building of the levees and the defense of the levees when the river approaches them, and under that policy the levees are built very widely apart, a long distance from the river, so it will be a long time, if ever, when the river attacks them, and then the defense of the levee when the river does attack it, is a part of that work. Very frequently levees go out by undermining and it is necessary to build others, but to make a permanent stream the defense of the levees should of course be carefully followed up by the proper engineering methods now in use, and that, taken in connection with the levee system ought to greatly improve the channel of the river.

The experience of the Reclamation Service in that line, which is not on the Mississippi River, but chiefly on the Colorado, is that it is better to crowd the river with the levees, build levees as close together as the present position of the river will permit—the closer the better—merely leaving room for the river to run between, and then to begin the defense right at first, because you have got to begin it sometime, and the less room you give the river the less it will meander, and it is the meandering of the river that undermines the levees. That plan, of course, requires a large amount of money, and Congress, I believe, never authorized that systematically for the Mississippi. I can not speak authoritatively on that, but if we had it to do over again in the case of the Colorado River, instead of placing levees 4,000 feet apart, as we did there, I would cut the distance one-half, one-third, or one-quarter wherever I could. Frequently the river winds so that you can not get levees very close together without cutting across bends, which would be very expensive and impracticable; but with that limit, putting the levees as close together as possible, and then starting the defense immediately wherever the river attacked it, you would eventually have a completely defended levee on each side of the river to hold the stream in a comparatively straight course, instead of allowing it to wander through the valley, where it gets up the force it does on these large curves, and there it is very difficult to control.

Senator NEWLANDS. Could Mr. Davis put these illustrations in the hearings?

The CHAIRMAN. I do not know, Senator, just the rule about printing such things. I will ask the Committee on Printing and try to get them in if you wish.

Senator NEWLANDS. Is there anything else you think of?

Mr. DAVIS. Nothing else I think of, unless there are some questions to be asked.

Senator NEWLANDS. As I understand it, the jurisdiction of the Reclamation Service covers nearly one-third of the United States, does it not?

Mr. DAVIS. Yes, sir; over one-third.

Senator NEWLANDS. And that includes the streams in the Great Basin, which run into the lakes in that basin?

Mr. DAVIS. Yes, sir.

The CHAIRMAN. And all the rivers that flow into the Pacific Ocean, and all the rivers that are tributary from the West, of the Mississippi and the Missouri?

Mr. DAVIS. No, sir.

Senator NEWLANDS. The headwaters?

Mr. DAVIS. There are many rivers that flow into the Mississippi from the West and do not come from the arid regions, but the larger ones do.

Senator NEWLANDS. Such as the Missouri and its tributaries?

Mr. DAVIS. Yes, sir.

Senator NEWLANDS. What are the main tributaries of the Mississippi up there?

Mr. DAVIS. The Yellowstone is the largest. We have two projects on that. The Milk, and many smaller ones.

Senator NEWLANDS. And then the Platte?

Mr. DAVIS. The Platte is one.

Senator NEWLANDS. And then the Arkansas?

Mr. DAVIS. Yes, sir.

Senator NEWLANDS. And the Columbia and the Snake?

Mr. DAVIS. Yes, sir; and the Rio Grande in the South.

Senator NEWLANDS. And the Sacramento with its tributaries?

Mr. DAVIS. Yes, sir.

Senator NEWLANDS. The Snake traverses three States, does it not, Oregon, Washington, and Idaho?

Mr. DAVIS. Those three States, and it rises in Wyoming. Most of the storage projects on the Snake River are in Wyoming. The Colorado is one of the important streams that arise wholly, perhaps the most important stream, that arises wholly in the arid region, being a stream that is international, interstate and navigable, and one which has given a great deal of trouble, caused a great deal of damage in the past. It is one of the important streams now being studied, and it is also one on which extensive storage is believed to be feasible. There are many very large storage reservoirs in the basin, and indoubtedly the final solution of the control of that river will include extensive storage. Storage is absolutely indispensable to best uses of its waters and will have an important effect on the control of those waters against damage.

Senator NEWLANDS. You speak of the Colorado being navigable. What navigation is there on that river now?

Mr. DAVIS. Practically none, now. There were several boats plying on the lower river at one time, and there may be one or two now, but they are very small, and the navigation since the advent of the railroad has been almost abandoned. The navigation on that river was important at one time, being the only method of reaching certain mining regions.

Senator NEWLANDS. Have you any questions, Mr. Chairman?

The CHAIRMAN. I have no questions.

Senator NEWLANDS. That is all, and we are very much obliged to you.

The CHAIRMAN. The next gentleman to be heard is Mr. George Otis Smith.

STATEMENT OF GEORGE OTIS SMITH, DIRECTOR OF THE GEOLOGICAL SURVEY.

Senator NEWLANDS. You have looked over this bill, Senate 5736, in conference with the gentlemen who have been named, have you?

Dr. SMITH. Yes, sir.

Senator NEWLANDS. Would you be good enough to state how your service can be useful in coordination with these other services in the problems relating to river regulation and development?

Dr. SMITH. Reference has already been made by Mr. Davis to the contributions of the Geological Survey. Of course, the general function of the Geological Survey is the investigation of the natural resources, especially the water resources and the mineral resources of the country.

Senator NEWLANDS. Water is regarded as a mineral, is it not?

Dr. SMITH. Yes, sir; the specific contributions that we have made and can make to river control are, of course, under the three divisions which, I believe, Mr. Davis also mentioned—hydrographic work, topographic, and geologic.

A large part of the knowledge that we have of the flow of the rivers of the United States, of course, has been obtained from the hydrographic work of the Geological Survey. For several decades now we have been prosecuting this work of stream gauging, a work which necessarily must continue over long periods in order to get satisfactory results regarding flow of the different rivers. There is a good deal more to learn and we are especially in need of long-period records on some of these streams. Unfortunately, for purposes of economy, we have felt it necessary to leave a river, or a certain station on a river after we obtained what we thought was the minimum number of years of record, sometimes against our better judgment, so that to get the best results, we need to continue that work, and especially in certain rivers; and on the rivers that have most to do with this subject of river control, we need some intensive studies in regard to it. We are coming much more to the making of intensive studies.

The topographic surveys, which represent some 35 years of work by the Geological Survey, form the basic data for use in the problem of river control in all of its phases. Thirty years ago, about, the survey also went into the matter of studying reservoir sites, making some reservoir surveys, and this was later followed by the beginning of the work which was specially directed toward the problem of reclamation. The problem that was soon afterwards taken up by at first a distinct part of the survey organization, and then later by a distinct bureau, the Reclamation Service.

Senator NEWLANDS. The Reclamation Service grew out of the bureau?

Dr. SMITH. Yes; out of the water resources work of the Geological Survey; and the union, of course, has been close between the two bureaus ever since.

Still later, the Geological Survey has been engaged in some study of rivers on the public lands, especially with reference to the possibilities of the development of water and of irrigation; the full use of the available waters on those rivers. In this connection, we have been engaged for several years in making river profile surveys of the principal rivers of the West, and we are publishing those regularly now.

The other line of investigative work which is under the Geological Survey is, of course, the geologic work, which has a definite bearing upon this big problem of river utilization and river control and river flow. That is the subject of geologic study.

Rivers and river plains have a geologic history which it is essential to study and to understand if engineering works are to be constructed, are to be permanent, and are to be effective. Some of the studies on the mechanics of a river have come from geologists who have looked not only at the river where it is flowing to-day, but at the product of that river in the past, and, of course, as reference has been made already, the geology of dam sites is very important.

Of course, the geology is simply one side of this many-sided problem, and that brings out what I believe is brought out in the legislation that is under consideration, the need of real cooperation among the different Federal agencies and the coordination of these different activities.

Reference was made by Senator Newlands to the other type of cooperation, that between the Nation and the States. Of course, a large amount that has been done in connection with the work of the Geological Survey—our topographic surveys—are, to a considerable extent, paid for out of State funds, and a large proportion of our river gauging stations are conducted at the expense of the State governments, the scientific control of the work being in charge of the Federal bureau, but the State sharing the expense.

In that way the advantage of such cooperation is, of course, that in adjacent States we have work that can be exactly compared, as it could not be compared if it were done under separate State organizations—independent State organizations.

I think this summary of what the Geological Survey is doing indicates the extent to which this one bureau could cooperate with the others in the solution of the general problem.

I might add that an example of the three-sided contribution of the Geological Survey to the problem of river regulation is given by the record of our participation in the administration of the Weeks law. The Geological Survey was required to report on the different tracts of land the purchase of which was contemplated, and in each one of these——

Senator NEWLANDS. State what that law was.

Dr. SMITH. That law provided for the acquisition by the Federal Government by purchase of forest lands in the eastern part of the United States which are believed to have a beneficial effect upon the river regulation, and in that way to have a bearing upon the navigation or navigability of rivers to which these streams and these watersheds are tributary.

This law required an affirmative report on the part of the Geological Survey that such lands would contribute to the navigability of the rivers, and in making the field investigations necessary for such reports it was found that the investigations had to be topographic and hydrographic and geologic, and we used engineers from all three of our field branches in the preparation of such reports, which included areas all the way from New Hampshire to Alabama.

Senator NEWLANDS. Who constituted the commission under the Weeks bill?

Dr. SMITH. The two representatives of the Senate, two representatives of the House, and the Secretaries of War, Interior, and Agriculture, the Secretary of War being chairman.

At the commission hearings, of course, the Forester is always present, and inasmuch as the administration of the act is delegated to the Secretary of Agriculture, and of course conducted by the Forest Service, I have had the privilege of attending most of those meetings and observing how such a commission can accomplish effectively the purposes of the act.

Senator NEWLANDS. Do you find the coordination of these departments provided for that act have worked beneficially?

Dr. SMITH. The coordination was not worked out in detail in the act, and this required a certain amount of elaboration of a plan on the part of the two bureaus that were especially detailed, with the help of the accounting officers of the Treasury, but that was very effectively worked out, and we found out that there was no accounting difficulty after we secured a favorable decision from the comptroller, no accounting difficulties in having the Geological Survey engineers work under an appropriation disbursed by the Agricultural Department. In a way it was a pioneer effort, but none the less successful.

Senator NEWLANDS. It has been successful both as to the results attained and as to the efficiency of the methods employed in securing those results, has it not?

Dr. SMITH. I believe so.

Senator NEWLANDS. You do not think that form of commission has tended to delay or cause inefficiency in any way, do you?

Dr. SMITH. Not in the slightest. I believe that the best results have been secured.

Senator NEWLANDS. Mr. Chairman, do you wish to ask any questions?

The CHAIRMAN. I do not wish to ask any questions.

The committee will now hear Dr. F. H. Newell.

STATEMENT OF DR. F. H. NEWELL, CONSULTING ENGINEER, HEAD OF THE CIVIL ENGINEERING DEPARTMENT OF THE UNIVERSITY OF ILLINOIS.

Senator NEWLANDS. You are head of the engineering department of the University of Illinois at present?

Dr. NEWELL. Yes, sir.

Senator NEWLANDS. You were formerly Director of the Reclamation Service, were you not?

Dr. NEWELL. Yes, sir.

Senator NEWLANDS. Prior to that time you were the chief engineer?

Dr. NEWELL. Prior to that time I was chief engineer from 1902 until 1907.

Senator NEWLANDS. And you were connected with that service from its inception until you retired from it recently?

Dr. NEWELL. Yes, sir; and previous to that I might add I was connected with the Geological Survey in 1888, at which time we initiated the stream measurement, and, with Mr. Davis, I have been connected with much of the work described by him, so that I can cordially indorse everything that Mr. Davis has said, although perhaps I am not quite as conservative as he is in reference to the effect of reservoirs.

Senator NEWLANDS. You were appointed by Mr. Roosevelt as a member of the Inland Waterways Commission, were you not?

Dr. NEWELL. Yes, sir.

Senator NEWLANDS. Who were the other members of that commission?

Dr. NEWELL. The chairman was Senator Theodore E. Burton, one of the most active men was W. J. McGee, now deceased; Gifford Pinchot, as forester; and Mr. H. K. Smith, of the Bureau of Corporations. Then, of course, was yourself and several men whose names have slipped my mind at the present moment.

Senator NEWLANDS. Senators Bankhead and Warner?

Dr. NEWELL. Senators Bankhead and Warner; yes, sir.

Senator NEWLANDS. Will you please state briefly your general investigations that you gave of waterway regulation outside of the particular area of your jurisdiction, as Chief of the Reclamation Service?

Dr. NEWELL. The waterway investigation, outside of the Reclamation Service, was largely that conducted under the auspices of the Geological Survey in previous years, when we extended the measurements of the stream from the arid regions throughout the United States, and at that time we studied up and read up practically everything that was available on the subject, and utilized that in developing a system of water measurement and study as far as we were able of the effect of various influences on the flows of a stream, particularly on forest, reservoirs, and brought together such data as were available concerning these matters.

Senator NEWLANDS. Then what investigation did you make in connection with the inland waterways?

Dr. NEWELL. In the inland waterways we brought together everything that could be had by the various bureaus of the Government that had been named, who are connected directly or indirectly with waterways, and finally published a report which embodied these statements, together with the conclusions of the committee, which were very carefully discussed and which led in a general way toward the views which have already been stated here by Mr. Davis and Mr. Smith.

Senator NEWLANDS. There will be no objection to putting that brief report here of the Inland Waterways Commission?

The CHAIRMAN. None at all.

Senator NEWLANDS. That report covered fully the system and recommended the coordination of services and cooperation of the Nation, of the States and communities that has been covered by this bill and covered by Mr. Davis in his statement this morning.

Dr. NEWELL. Yes, sir. It brought in both the ideas of cooperation and coordination, not only in Federal bureaus but in all organizations, State, municipal, district, and others, and the thorough study of the river, beginning at the origin at the mountains, in the forest, and the question of soil erosion was made rather prominent; the question of preserving the purity of the water, the matter of storage reservoirs, of the so-called open reservoirs, and all other factors that had an influence, directly or indirectly, on the use of the water, not merely for navigation, but in all industrial purposes, including supply for human needs and for agriculture. It has brought out, I think, incidentally, the question of the effect of drainage and the part it bore in intensifying the floods.

I might add at this place that my recent experience in drainage in Illinois and adjacent States is that many large areas are being drained where the agricultural conditions, the soil conditions, are not really suitable for drainage, and such localities should be held rather for storage, either as swamps or as open bodies of water, rather than an attempt to be made to utilize them for agriculture. In other words, we have not always studied sufficiently well the soil characteristics, but have tended to assume that if a piece of ground was wet that it would have considerable value for agriculture when it was dried out, and that has not always proved to be the case. So that in the full study of the best conservation use of the water resources we must pay more attention to the relative consideration and industrial values than we have in the past, and not confine our thoughts so much to any one line.

Senator NEWLANDS. Just briefly give your views in regard to the practicability and the desirability of taking up comprehensively the control of rivers from their sources to their mouths, including their tributaries?

Dr. NEWELL. It seems to me there can be no two opinions on the necessity of considering the river as a whole from its origin to its mouth, and of beginning the systematic study, the topographic surveys, forest surveys, soil surveys, and everything which affects the quantity and quality of the water, and that system of improvement which at present seems impracticable, when considered from one standpoint, may be made practicable when considering all standpoints. That is to say, a storage reservoir alone for ameliorating floods from storage studies may be considered impracticable unless we discover there are other possible uses and other possible benefits that flow from the creation of storage, either closed or open, and that, as illustrated in the case of the Miami River by Mr. Davis, the first conclusions that we arrive at may frequently be completely upset by more careful study of all the secondary uses of the water, and of the advantages that arise from all the uses.

I may state that as chairman of the special committee of the American Society Civil Engineers we have been studying the question of a national water law, not from the legal standpoint so much as from the physical standpoint—the engineering—and have brought out a preliminary report which I should like to insert here—it is very brief—showing that the uses of water should be studied in this way for the whole river, first from the standpoint of immediate human needs, for drinking water, municipal supplies; second, from the standpoint of producing food, including irrigation and drainage, and, third, from the standpoint of the necessity of using streams for the disposal of sewage and industrial waste, where with our growing population the water that has once been used must come back into the stream channel, and, with suitable treatment and purification, the use of the stream must be considered in that connection. The fourth use in manufacturing and various industries, of course, comes subordinate to the three before, and the final and last use, that of irrigation, which is now first in law, should, under the engineering conception, really be the last to be considered in the great uses of the water for the preservation of human life and production of food.

Senator NEWLANDS. You will insert that in the record?

Dr. NEWELL. I should like to.

The CHAIRMAN. You may do so.

I should like to have you explain a little in detail, Professor, what advantages you think would come from the practical working of such an organization as this bill contemplates over the present methods.

Dr. NEWELL. The present method depends largely on individual acquaintance, and, you may say, courtesy. We frequently in one bureau proceed along lines which are quite important without discovering that some other bureau has already attempted the work, or is carrying on certain correlated investigations. The Government organization is so big, and there are so many changes that take place in it, that unless there is some well understood and some well digested system of cooperation we are very apt to ignore or overlook some detail. But more than that. There is always a big gap left in any investigation due to the fact that no one has a particular right to enter on that. For example, in the investigation of reservoirs in the humid East, the Forest Service can do certain things; the Geological Survey can do certain other things, but there remains sometimes need of a definite survey of some large area which can not be covered by existing appropriations or existing organizations.

In other words, we need a better coordination; the filling in of the big gaps that sometimes occur from the fact that each organization is working independently under appropriations that were meant for entirely different purposes.

The CHAIRMAN. Do you find any duplication of work at the present time?

Mr. NEWELL. I will not speak for the present time, but judging from my knowledge extending over a quarter of a century, there has been considerable duplication, and while we are all striving to prevent it, we often do not discover the real duplication until too late, until it has been done.

The CHAIRMAN. Has there been any change since you left the service that you know of?

Mr. NEWELL. I am not aware of any.

The CHAIRMAN. It is substantially the same as when you were in the service?

Mr. NEWELL. I assume they are; yes, sir.

The CHAIRMAN. And did you find considerable duplication at that time?

Mr. NEWELL. Yes, sir.

The CHAIRMAN. Could you state a case?

Mr. NEWELL. I think possibly Mr. George Otis Smith could give more of the details, but the thing that occurs to my mind just now is the mapping of the different States by three different organizations. The Land Office would prepare a very good map on a certain base, the Geological Survey would prepare another map on a slightly different scale, the Post Office would prepare another map on still another scale, and the Bureau of Soils, perhaps, would prepare still another map. Now, other cases more far-reaching than that could doubtless be given, because I recall the thing has been discussed quite fully, and at one time we had a committee in the department which pointed out a large amount of that work which very few of us ever suspected existed.

Senator NEWLANDS. But I imagine the chief difficulty is with the gaps between?

Mr. NEWELL. It is more with the gaps that exist between existing data.

The CHAIRMAN. You understand all those gaps would be closed by this board legislation?

Mr. NEWELL. That is our hope, that by having the legislation more inclusive and by bringing together all these bureau chiefs in official cooperation rather than merely personal, that a very definite and comprehensive system can be laid out by which each organization will have its distinct work clearly understood before it is begun.

Now in the old days, for example, the Weather Bureau was not able to put in rain gauges or establish a great many rain gauges in mountains of the West. Under a cooperative arrangement, as proposed under this bill, it would have been possible for the Weather Bureau to have used its overhead supervision, perhaps, to better effect in putting out those gauges than we could do. And there are, as in all large business, in any very extensive business, there must be not merely personal cooperation but a strong official cooperation to bring together the different departments, as in any big manufacturing organization.

The CHAIRMAN. Would there be any conflict of authority between these different departments, or do you think they would all work harmoniously together under the terms of this proposed bill?

Mr. NEWELL. Under the terms of this bill they must work together, because each of the Secretaries to whom they report is brought in as a member of the supervising body and there would be no difficulty under the terms of the bill, as I understand it, in smoothing out any differences of opinion that might arise under superintendence.

The CHAIRMAN. How would the appropriations be made for the various departments under this bill?

Mr. **Newell**. As I understand this bill proposes a relatively lump appropriation, and the apportionment would undoubtedly be made by the supervising body according to plans submitted by the men in direct charge. It would be a matter of preparation of budget and approval of budget by a few men in authority.

The **Chairman**. Do you favor the idea of Congress giving a large sum to a body of this kind rather than making the appropriation itself?

Mr. **Newell**. I do, most decidedly, because of my long experienc under both methods. Under the Geological Survey, for example, and most of the bureaus, the appropriation is made in considerable detail, allowing very little elasticity to meet the conditions that arise. Under the Reclamation Service, however, for the first dozen years of its existence we had a lump-sum appropriation, and I think and know it was possible to carry on a more effective coordination of the work, because as emergencies arose the Secretary of the Interior could apportion money to meet that emergency. In fact, I do not see how we could have started the work effectively if that condition had not existed.

In other words, there is every incentive, such as exists in a big corporation, for men in direct charge to use economy in producing results where they are allowed to have ample money to meet the conditions and are not compelled to meet certain prescribed, fixed conditions.

The **Chairman**. What do you think of this suggestion of the board, or of the body of gentlemen who met yesterday, advising that there be no lump sum appropriated at this time, but merely an appropriation of $1,000,000 to make investigations and studies for the first year? Do you approve that idea, or do you think we ought to have $60,000,000, as suggested by the bill?

Mr. **Newell**. I had not thought of that. Of course if the men who are to have direct charge believe they can utilize the lump sum of $1,000,000 in the next year, I should be guided largely by their careful consideration.

My thought, however, has been, and in discussing the bill previously, that each bureau had enough work laid out so that they could utilize a very considerable amount of money immediately. For example, the Geological Survey, I assume, could at once expand its topographical work and the Reclamation Service could at once expand along the construction of the reservoirs, which have been under contemplation, so that I should not like, offhand, to give an opinion on that.

Senator **Newlands**. You believe, Dr. Newell, that it is wise to indicate in the legislation the confidence of Congress in the comprehensive development of these waterways, and its purposes?

Dr. **Newell**. Yes, sir.

Senator **Newlands**. To go at the thing thoroughly and give the funds, however large they may be, for its accomplishment?

Dr. **Newell**. We have found that efficiency is promoted, as in civil life, by defining the broad principles—the thing that is to be done—and then leaving to the man in immediate and direct charge the determination of all the details as to just how the money is to be spent. Our attempt to anticipate all those conditions usually leads to lack of economy.

Senator NEWLANDS. That is your observation in connection with the Reclamation Service?

Dr. NEWELL. Yes, sir.

Senator NEWLANDS. And in connection with the Geological Survey?

Dr. NEWELL. And practically all services. If the thing to be accomplished is clearly laid out, the man in direct charge can usually expend his money more effectively, than by attempting to define all of the conditions which he may be called upon to meet, which rarely happen as anticipated.

The CHAIRMAN. The committee will recess now until 2.30 p. m.

(Thereupon at 1 o'clock p. m. the committee took recess until 2.30 p. m.)

AFTER RECESS.

The subcommittee, at 2.30 o'clock p. m., reassembled pursuant to the taking of the recess.

The CHAIRMAN. Senator Newlands, who do you desire to speak next?

Senator NEWLANDS. I will ask Mr. Graves to address the committee.

STATEMENT OF HENRY S. GRAVES, CHIEF FORESTER, UNITED STATES DEPARTMENT OF AGRICULTURE.

Senator NEWLANDS. Mr. Graves, you participated in the conference of the chiefs of the bureaus of the scientific services relating to Senate bill 5736, did you not, on yesterday?

Mr. GRAVES. Yes, sir.

Senator NEWLANDS. I assume that you, in connection with other chiefs of the service, took part in the deliberations of two or three years ago regarding the question of river regulation?

Mr. GRAVES. Yes, sir; I was one of the representatives of the Department of Agriculture at that time.

Senator NEWLANDS. And that conference was held at the instance of the department chiefs?

Mr. GRAVES. At the instance of the Secretaries of War, Commerce, Agriculture, and Interior.

Senator NEWLANDS. And the purpose of it was to consider how the bureaus' scientific services could coordinate in the work of river regulation and in reference to cooperation between the services and cooperation between the Nation and the States and communities in this work?

Mr. GRAVES. We considered the relation of work of the different agencies represented at those conferences to the problem of water resources, control, and development, and the need of coordinating their activities so as to secure harmonious and combined effort in contrast to scattered effort, where the lines of work of all the different departments touched. The Forest Service, over which I preside, is concerned in this whole problem because of its responsibilities relative to the protection, propagation, and use of the forests of the country. We have the administration of the national forests which are within the bounds of the United States, occupying approximately 135,000,000 acres, lying in the high mountain regions, for the most part at the headwaters of the different streams and rivers, particularly located in the western mountains, but with a number of important units in the eastern mountains, and through recent purchases under the Weeks law the forests being enlarged in the southern Appalachian and White Mountains of New Hampshire, our responsibilities go further than the mere taking into consideration of public properties. They concern the promotion of the forest movement through the country to bring about a better handling of the forests which are in State and private holdings. This is accomplished through cooperation with other public agencies, such as State agencies, county and town agencies, and private owners, and through investigative work in regard to the science and practice of forestry. The forests are important in connection with this whole enterprise because of their location on the watersheds of streams and rivers whose waters are used for navigation, for industrial purposes, and for domestic purposes.

The national forests have a close relationship to water resources. A number of the national forests are set aside, primarily, for the protection of the timber, brush, and other vegetative cover on the watersheds of streams which are important in the local industrial development, in some cases for larger rivers and in many cases for small streams used for irrigation and domestic purposes.

The national forests in the West have a close relationship to the irrigation problem. I think I might illustrate that, as well as by any other means, by a map of Colorado, which shows in green [indicating] the national forests occupying the high ranges; in red, the approximate location of the irrigated land of the State. As you will see, the streams flowing down into the lower irrigated land rise in the national forests. The relation of the irrigation interests, as well as other water-using interests, to the national forests is illustrated in Colorado, as well as other mountain regions of the West, by the damage which has been done to those interests through the erosion which has resulted directly from abuse of the vegetative cover, stripping the mountains of the timber and overgrazing, the combined influences having resulted in many cases in the eroding of the watersheds and practically changing the character of the stream flow, resulting in an immense amount of damage by actually cutting out great channels, cutting through orchards and irrigated land, and by filling up reservoirs, canals, etc.

We have many illustrations in the western mountains of such damage. The chief purpose of the Weeks law, passed in 1911, authorizing the purchase of land in the eastern mountains, was the protection of the forests and vegetative cover at the headwaters of our navigable rivers in the East. The work of purchasing land under that law—that is, the final responsibility—was placed in the hands of a commission called the National Forest Reservation Commission, which, I think, has been an exceedingly good illustration of the coordination of different organizations and agencies of the Government interested in a common purpose—the Forest Service with its experts in appraising timber, the Geological Survey with its experts in physiography and erosion and stream flow working together under this commission, carrying out the purpose of that law, and, I should perhaps add, also the Department of Justice, which passes upon titles of land. It has been an exceedingly successful commission and, I think, a good illustration of the principle which is embodied in this measure under discussion.

Senator NEWLANDS. Can you suggest any method of organization that would be more efficient than the one which was devised with reference to the Appalachian region?

Mr. GRAVES. I am not sure, but I think that is the only illustration of a commission composed of cabinet officers and Members of the House and Senate. The Secretary of War is president of this commission and the Secretary of the Interior and the Secretary of Agriculture are members. There are also two Members of the Senate and two Members of the House, all of them very busy men. There has never been any difficulty in bringing the commission together to handle recommendations relative to purchases. It has been an active and very efficient commission in handling the business.

Senator NEWLANDS. Who are the Members of the House and Senate?

Mr. GRAVES. Of the Senate, Senator Gallinger and Senator Smith of Maryland; and of the House, Gordon Lee, of Georgia, and Mr. Hawley, of Oregon.

Senator NEWLANDS. Is the business mainly conducted by the department chiefs, or do the congressional members participate much in the deliberations?

Mr. GRAVES. All of the members are active in the deliberations and the commission has at a number of times personally visited prospective purchases and the commission has been, or a part of the commission has been, in New Hampshire, North Carolina, Tennessee, West Virginia, and Georgia.

Senator NEWLANDS. How many acres have been acquired by the commission?

Mr. GRAVES. There have been approved by the commission and contracted for, approximately, 1,300,000 acres located partly in New Hampshire, Virginia, North Carolina, South Carolina, Tennessee, and Georgia.

Senator NEWLANDS. What portion of it is in New Hampshire?

Mr. GRAVES. About 300,000 acres, approximately.

Senator NEWLANDS. That purchase affects the flow of the Merrimac and Connecticut Rivers does it not?,

Mr. GRAVES. That affects the flow of the Connecticut River, the Androscoggin that flows down into Maine, and the Merrimac and the Saco Rivers. The most important rivers in the Southern Appalachians are the Potomac, James, the Yadkin, the Santee, the Pedee, the Savannah, going around, the Coosa, the tributaries of the Tennessee and the tributaries of the Monongahela—both tributaries of the Ohio.

Senator NEWLANDS. How many different appropriations have been made and what was their amount?

Mr. GRAVES. The original appropriation was $11,000,000. That was passed in 1911. One million dollars lapsed because the wording of the law authorized the first million to be expended before the expiration of the year 1910; so that the wording of the law itself eliminated $1,000,000. Two million dollars lapsed because the law originally appropriated by fiscal years—$2,000,000 each fiscal year, and if it was not expended during the fiscal year it reverted to the Treasury. It took about a year to organize the work and build up the force and we were unwilling to hurry in the purchases because we could not get good terms under such procedure as that. Therefore, about $2,000,000 more lapsed. So approximately the amount which would have been spent by the end of this year is nearly $8,000,000. There have been no further appropriations for the purchase of land. There was, however, in the original Weeks law, an appropriation of $200,000 to enable the Federal Government to cooperate with the different States in the protection of forests from fire, located on navigable rivers, where the appropriation was used up in about two years, and since then there has been an annual appropriation of $100,000 in the agricultural appropriation bill to carry out the same purpose—to cooperate with the different States in the protection of forests at the headwaters of navigable rivers. The condition of the allotment of money for that purpose was that the State should expend as much money as the Government would expend. In actual practice, this provision of the law has been exceedingly successful and the States have been eager to take advantage of it. It has resulted, I believe, in a great deal of interest in forestry in the States. It has resulted in the State expending four or five times as much as the Federal Government, as the Government expends about one dollar out of five in the cooperative work.

Senator NEWLANDS. So the effect of this machinery of cooperation has been to stimulate the expenditures of States and localities?

Mr. GRAVES. It has greatly stimulated it; so much so that I think the most notable results of that item of expenditure has been educational. It has had the result of protecting a great deal of land from fire, and it has also had great effect in stimulating the expenditures on the part of the States.

The CHAIRMAN. What has been the character of this cooperative work that you say the States have been engaged in? Have they aided in buying land?

Mr. GRAVES. No, sir; it is by a patrol and protection of land outside of Government lands from fire. I believe that the form of cooperation is strongly in line with the principles of this proposed legislation. The Federal Government and the States, considering a common object and common purpose and pooling their interests, are working out together a practical system of administration under whatever procedure of administrative machinery may appear to be practicable to the cooperating agencies. I can give an example of the effectiveness of that cooperation.

In the State of Oregon, the lumber companies have united in fire protective associations. The State has a forest agency and a State forester with funds, some of which he may expend in the protection of forests from fire. The Federal Government has charge of certain areas of national forests. These agencies have united in such a practical system of coordinated protection as virtually to constitute a single organization over the whole State. The effectiveness of that may be shown from this illustration: When, I think it was three years ago, Congress appropriated $25,000 for the protection of the Oregon and California land-grant lands in the State of Oregon, which were then in dispute, the first decision had been against the company and the company felt unwilling to expend money on that protection. The responsibility was placed on the General Land Office who brought us into it as a matter of cooperation and we were able inside of three days by telegram to put all of these scattered areas under effective fire protection, and it was only because the different agencies owning land around them were already working under a coordinated system; in other words, it is a practical illustration of the coordinated administration of a public matter in which the Federal Government, the State agencies and the private agencies have all pooled their interests and worked out a practical system of handling it.

Senator Newlands. As I understand it, the bill under which you have acted provided for a million dollars a year for some years, did it not?

Mr. Graves. The Weeks Law?

Senator Newlands. Yes.

Mr. Graves. That appropriated a lump sum of $11,000,000 originally and $1,000,000 was to be spent before the expiration of the year 1910, and thereafter $2,000,000 a year until the year 1915.

Senator Newlands. How did you find that that lump-sum appropriation worked; did it tend to extravagance or did it tend toward simplicity and efficiency?

Mr. Graves. It tended toward simplicity and efficiency. The first form of the bill was embarrassing because it appropriated $2,000,000 a year. There was a pressure therefore inevitably on the commission and our department to hurry purchases during that year, so we went to Congress and asked them to make that $2,000,000 available until expended. So each year $2,000,000 after that became available but it was available until expended. That enabled us to proceed in a businesslike way in negotiating for purchases. This work has been entirely by negotiation.

Senator Newlands. Suppose in that work you had simply started out with an appropriation of $2,000,000 for the first year, and with the hope that you would get $2,000,000 appropriated each year thereafter, would you have been able to do your work as efficiently as you have done it?

Mr. Graves. No, sir; there is no question about that. The work could not have been done as cheaply or as efficiently. I do not think we could have gotten lands at as good rates as we did. For example, now as the money has been nearly expended there is of course a possibility of extension of the purchases, and there are a good many land tracts which have been offered to us at very reasonable rates which we could not take advantage of, and which undoubtedly if there should be an extension of the appropriation we would not be able to get, in the long run, under as good terms as they were at first offered to us. In other words, with a lump fund (I am speaking of this kind of work) we are in a position to take advantage of favorable purchases at favorable rates, and in the right places, as you can not do where there is a great question whether the money is going to be appropriated.

Senator Newlands. I suppose some of these negotiations have been protracted and run over a long period of time?

Mr. Graves. Some of them have taken us three years to work out. We have not condemned land except by agreement. We bought land through negotiation, and the only condemnation has been when clearing title under agreement. But we have not gone on land contrary to the wishes of the owners and purchased land because we have found that we could get much better terms the other way, and we found we could get the land which was most desirable and in the long run we could work it out better in that way.

Senator NEWLANDS. You think that system would be much more effective than the system which would have made it uncertain as to whether a new appropriation or succeeding appropriation would be made of this sum?

Mr. GRAVES. I do not think there is any doubt about that. It is just like building up the holding of land in private. If you do not know anything about where your resources are going to be, you are not in a position to take advantage of the situation.

Senator NEWLANDS. You are not in a position to contract or negotiate regarding the future?

Mr. GRAVES. Yes, sir; there are many cases in the purchase of land where you are buying very considerable areas of this sort and you are able to take advantage of conditions to buy land yourself where you want it at certain times, and maybe a few months afterwards conditions surrounding the ownership of the lands have been entirely changed and it is impossible to purchase it at those rates. That has frequently happened.

Senator NEWLANDS. You bought this land with a view to protecting watersheds of navigable rivers, did you not?

Mr. GRAVES. Yes sir.

Senator NEWLANDS. What is your judgment as to the beneficial effect of these purchases upon the watersheds and upon the flow of the rivers themselves?

Mr. GRAVES. The desirability of having the forests protected?

Senator NEWLANDS. No; for the purpose of commerce.

Mr. GRAVES. I do not think there is any question but what, viewed in a large way, it is not only desirable but necessary to have the headwaters of our rivers protected. The effect of deforestation on water resources is much more spectacular in the semiarid region of the West than it has been in the East. The conditions of tree growth are more critical. The effect of the abuse of the mountains has been more spectacular in scouring out great gullies and practically changing the whole flow of the channels of the rivers. In the heart of the wooded region of the east the forests propagate themselves more vigorously. The forests are not destroyed as easily as they are in the more critical conditions of the West.

These pictures illustrate some of the erosion of the eastern mountains and that is where the effect of the deforestation is seen most readily.

Senator NEWLANDS. Has the service upon this committee of Members of Congress been at all potential in enabling Congress to keep better track of the work, do you think, than if it had been conducted by a purely administrative commission?

Mr. GRAVES. I have felt that it has been a very good thing to have had a commission with that makeup, and I think in our conferences two years ago I emphasized that point, and recommended that that would be a desirable form of commission.

Senator NEWLANDS. You mean at the conferences with reference to——

Mr. GRAVES. I mean the conferences of our bureaus two years ago.

Senator NEWLANDS. With reference to river regulation generally?

Mr. GRAVES. Yes, sir; that is in handling a very large project involving so many interests, I believe it has resulted in a closer touch between the legislative and the executive branches of the Government.

Senator Newlands. One other way of producing this coordination would be to unite all these bureaus and services in one department under one department chief, would it not? Could that be done?

Mr. Graves. I had not myself conceived that that would be a practicable thing to do. The interests which affect water resources are very broad. The various bureaus in the Department of Agriculture and a number of other bureaus are affected and I should think it would be rather difficult to bring all of that work under one head. I have felt that any plan, such as has been proposed, where we could secure a kind of coordinated effort in work pertaining to water resources which we are not getting now—would be a practicable one, and I have also felt that it would be a very much needed one. I believe it would be very far reaching and I think it would bring about coordinated effort even beyond the problems of water resources.

Senator Newlands. In your recommendation that this appropriation shall be limited to $1,000,000 did you have in view the beneficial effects of a comparatively free hand by a competent board with reference to the creation of plans covering a considerable period, and the expenditure of a very considerable amount of money, with a view to accomplishing a definite result without breaks and uncertainties?

Mr. Graves. My feeling is that we are not in a position to recommend precisely the amount of the larger appropriation, and that I am in a position to urge very strongly this form of organization looking to carrying out this large project, which I believe the measure has in mind. I distinctly, myself, have in view the larger principle that you are speaking of, and it is merely that I do not feel that I can make a definite recommendation as to the amount of money, and I believe that it would be much better to begin now to establish the organization with reference to this principle even if we had to await the result of the first investigation before we could make a very definite recommendation as to the total amount. Have I answered your question?

Senator Newlands. Yes. Outside of the question of the amount of the appropriation, your conference was in harmony with the general organization provided for by this bill?

Mr. Graves. Absolutely. You see we simply felt we could not make a specific recommendation as to the amount.

The Chairman. Mr. Graves, you have conveyed the idea that you liked the cooperation of Members of the House and Senate in matters of this character?

Mr. Graves. It has worked exceedingly well in the forest commission.

The Chairman. You do not contemplate having any on this new board?

Mr. Graves. I do not recall whether this particular bill calls for that or not.

The Chairman. No, it calls for the President of the United States and four Cabinet officers. Do you know why they leave out members of the Senate and House?

Mr. Graves. There have been several forms of the bill and I do not recollect about that.

The Chairman. This bill provides for a board of which the President of the United States shall be the head.

Senator NEWLANDS. I imagine there would not be the slightest objection to the inclusion of Members of the House and Senate if it was thought advisable to have them.

Mr. GRAVES. I think there has been one bill——

The CHAIRMAN. I am not discussing that. I am simply asking Mr. Graves why it was, if that worked so well, that his conference did not advise something of that kind. This provides for a waterways council composed of the President of the United States, who shall be chairman, the Secretary of War, the Secretary of the Interior, the Secretary of Agriculture, and the Secretary of Commerce, and the chairman of the water-control board, but you leave out Members of Congress entirely.

Senator NEWLANDS. The conference did not shape that bill.

The CHAIRMAN. They made a report upon it.

Senator NEWLANDS. But they did not shape it.

The CHAIRMAN. They were asked to give advice, I take it, in regard to a proper measure of legislation. This is not legislation; it is simply a suggested method of legislating for a most important subject, and you were asked to confer and advise with regard to it. Now, you did see fit to advise against giving $60,000,000. You said you did not think they ought to give more than $1,000,000. Now, my question is, if the present Members of Congress on the board worked so well, why did you not suggest what change ought to be made as well as to suggest, instead of $60,000,000, $1,000,000?

Mr. GRAVES. This conference yesterday was a conference called hurriedly at Mr. Davis's office with reference to this work, and the question came up in regard to the appropriation, and we felt we were not in a position to make specific recommendation on this particular matter, but otherwise the principle of this bill should stand. Now, as to that particular point, it is my recollection that in our recommendation to the Secretaries last year we did recommend that. In other words, the only formal recommendation which we have made to our respective heads of departments was that recommendation. That is my recollection.

The CHAIRMAN. May I see the recommendation that you made yesterday? I did not look it over.

Senator NEWLANDS. I will state by way of explanation that this conference was called together yesterday by Mr. Davis, and was the result of an intimation from myself to him over the telephone that there would be a hearing of the chiefs of the various scientific services and it would be best for them to get together and look over this bill and familiarize themselves with it, with a view to giving their views before the committee; but there was no suggestion that they should make any specific recommendation or report.

Mr. GRAVES. We did not take it up in that way. It was a very short conference.

Senator NEWLANDS. Rather a continuation of a conference that you had some time ago?

The CHAIRMAN. The only point I was making is they did specifically advise in regard to one very important feature of the bill, which was an appropriation of $60,000,000. You cut that down to $1,000,000. Now, here is another very important feature of the bill, which would be vital, I think, in the opinion of a great many people, because I have heard a good many expressions in regard to the kind of board here, and you make no expression in regard to this, but when you testify you do show how wonderfully well this other board has worked, which has four Members of Congress on it.

Mr. GRAVES. May I read an extract from our report of last year, where we went into the form of organization?

The CHAIRMAN. Yes.

Mr. GRAVES (reading):

> The committee believes that there should be such a waterways commission as is proposed. It is suggested, however, that it would be a wise policy to have added to the commission two Members of the Senate and two Members of the House.

Our recommendation in regard to the appropriation was not so much a recommendation against any specific amount, but our feeling was that we were not in a position ourselves to make any recommendations specifically as to what the amount should be, so we refrained from that.

Senator NEWLANDS. That only covered the services with which you were connected?

Mr. GRAVES. Yes, sir; but we felt there should be an appropriation sufficient to enable the organization and preliminary work of the board or commission.

Senator NEWLANDS. It was not, however, intended to exclude from the present commission any projects which are ready for work under the Corps of Engineers of the Army?

Mr. GRAVES. No, sir; I would not take such a position. I had not felt so. But I simply felt that I was not in a position to come and testify about any specific amount that might be appropriated.

The CHAIRMAN. You spoke of the advantage of having a lump-sum appropriation in this Appalachian Forest Reserve. I have no doubt if Congress were to give you a lump sum, you could run your whole service a little bit better, probably, than you could do it in the desultory way in which appropriations are made. Do you not think you could?

Mr. GRAVES. I think in some cases in the handling of the business it is an advantage not to be restricted too much in the amounts.

The CHAIRMAN. Is it not probably true that the Agricultural Department, if given, say, $25,000,000 with which to perform the various functions of the department, might make a good many savings in the detail work of the department, perhaps more savings than are made now when Congress itself sees fit to apportion that money out among the various bureaus? Do you not think probably it could be conducted on a little better basis if one man was at the head of the whole thing?

Mr. GRAVES. I think in many cases, in the conduct of our own business, in the handling of the national forests, that I could effect savings.

The CHAIRMAN. You could effect a very considerable saving, could you not?

Mr. GRAVES. And greater efficiency with the same amount of money under a plan of a lump sum. For example, we have an appropriation for each national forest. There are 155 forest units, I think, for which appropriations are made. If there were a lump appropriation for all the national forests, or for different groups of forests, considerable groups of forests, say in six or seven districts, there would undoubtedly be advantages from a business standpoint.

The CHAIRMAN. Would that probably not be true of the other bureaus of the Department of Agriculture, as well as your own?

Mr. GRAVES. I have no doubt of it.

The CHAIRMAN. You hardly anticipate, though, that Congress is going to make appropriation in that way?

Mr. GRAVES. I have not asked it.

The CHAIRMAN. I imagine, Mr. Graves, that the same thing which would apply to the Agricultural Department, would probably apply to all the other departments. Do you not imagine the Secretary of War could take a lump sum and handle it maybe a little better than we do? Of course, you are not in the War Department.

Mr. GRAVES. I would not put it quite that way. I would not say better than Congress could, but simply a principle——

The CHAIRMAN. It would tend to greater efficiency if one man handled a thing of that kind than if five hundred handled it, would it not?

Mr. GRAVES. That is not quite the point, sir. The point I have in mind is trying to estimate the exigencies of the business I am handling a year and a half in advance, trying to determine what forces are going to be located here and there, which is rather difficult, and that is where the greater efficiency would come. It is not a question of whether one man's judgment is better than several men's judgment.

The CHAIRMAN. A great many would not believe you if you said that one man's judgment was better than 500 men's judgment. Certainly no National Legislature would believe anything of that kind.

Mr. GRAVES. The other is the system, and, as I say, I have not made any request for a lump-sum appropriation.

The CHAIRMAN. There are evidently two sides to this lump-sum business.

Senator NEWLANDS. Of course this does provide for lump sums.

Mr. GRAVES. At the same time I think there is no question that in that Weeks law, Senator, it has worked very much better.

The CHAIRMAN. In that particular case, I always thought it would work well, and I have not any doubt that it is a wise move.

Mr. Marvin, we would be glad to hear you.

STATEMENT OF MR. CHARLES S. MARVIN, CHIEF OF THE WEATHER BUREAU.

Mr. MARVIN. Mr. Chairman, if I may state this thing without questioning, I might say that the part the Weather Bureau would play in this question of river regulation seems to me a very important one that has not come into prominence much in the discussion and hearing thus far.

The Weather Bureau, as you understand, is the agency that now collects nearly all the information concerning water as it comes to the earth from the atmosphere, either in the form of snow, hail, or rain, or whatever it may be. That is one of its functions—to collect that information. Another of its functions is to measure and gauge rivers. That work has been carried on chiefly in connection with flood conditions of the flow of the rivers. Our observations of stream gauges, heights of rivers, etc., are made primarily at the time floods are threatening and become actually in flow, and during the low-water flows of the stream these observations as a rule are not made, except in certain streams operated for navigation.

Now, I can not conceive of any big project of river regulation that does not contemplate the continuance and careful measurement of the precipitation, which, of course, is the source of all floods ultimately, either in the form of a snow on the ground, which has fallen previously, or water which falls as rain on the snow, accompanied by conditions to temperature that melt the snow and release it for the flow of the streams.

That outlines and indicates the part that the Weather Bureau might have to do with the problem of regulation of waterways, by furnishing information concerning the precipitation and flow of streams.

Our service of flood warnings would become, it seems to me, of very great value to engineers working on the project of river regulation, such as contemplated by this bill. You can imagine if this bill were enforced that, for example, there would be many engineering works in progress throughout the country on the rivers in which the works would be greatly imperiled without an adequate fore knowledge of threatening floods, even of small character, during the progress of construction. The Weather Bureau would be in position to keep these engineers fully informed at all times of the impending conditions by issuing forecasts of threatened floods, or it might be only increased flow. The general weather conditions, changes of temperature, etc., might also influence these works. The Weather Bureau should contribute to that by keeping engineers and other agencies of the bureau advised in regard to the progress of that work.

As for the part the Weather Bureau had in this conference, etc., I can only say that it seemed to me that the plan of making a comprehensive survey of development of water resources, as provided for in the bill, was a much needed proposal—a much needed plan for comprehensively developing the water resources and the prevention of injuries from floods in every possible way.

I was in full accord with the other members of the committee as regards the plan of commission to be created; or not exactly commission, I think it is the waterways board or council. Those two administrative policies seem to me to be under the existing plans of the conduction of Government affairs about the most effective and the most efficient of any that we could conceive of. Mr. Graves has just mentioned that the suggestion of Members of Congress, membership on the water council was suggested by the committee in their former deliberations on this subject.

The plan of administration, as I say, seems to meet the existing requirements, and as for the appropriations that I think should depend upon what the board itself indicates as, in its judgment, may be necessary. It seems to me that no engineer and no small group of engineers should be prepared at the present time to say just what works are most needed; where works should be put in progress; how much it would cost, etc. That, it seems to me, is proper to leave to this agency, created for the conduction of this work. Under that view of the subject the appropriation of $1,000,000 to begin with seems to be about as much as you could economically use, but with me I regard this act as an organic act, creating an agency of the

Government that should accomplish the objects set out in that act. When that agency is set to work, it itself can determine better than any of us how much will be needed, what will be needed, and where the work will be put in operation, and for that reason I was in favor of simply the appropriation that would start the work.

The CHAIRMAN. Do you mean by that you are in favor of $60,000,000 to start with?

Mr. MARVIN. The $1,000,000 that was suggested in this report of the committee that met yesterday, that is if it is decided by Congress to create this agency for studying the waterways problem broadly and comprehensively, it seems to me that million dollars is a sufficient amount of appropriation to start with, but I assume, in making that statement, that if Congress sees the wisdom of creating an agency of this sort, it is willing to meet the recommendations of that committee by adequate appropriations to carry out its recommendations in the future.

The CHAIRMAN. That is after the committee has made a study and made recommendations?

Mr. MARVIN. After the committee has made a study and has made recommendations.

The CHAIRMAN. Specific recommendations?

Mr. MARVIN. Specific recommendations.

The CHAIRMAN. Would you contemplate that Congress ought to give that commission a big lump sum and let it spend that money as it saw fit for navigation or irrigation or drainage or forestry, or any purpose of that kind, or should it recommend specifically to Congress certain great or certain small projects estimated to cost so and so and recommend that appropriations be made for carrying this out? Should it be done in that way, or should it be a great lump sum to spend as the commission saw fit?

Mr. MARVIN. I wish to express myself in general in favor of the advantage of large sums of money to carry out projects which must necessarily continue over a considerable period of time. If, for example, this committee were to make several recommendations for lines of work that could be better begun at an early time in the future, and if those lines of work represent an expenditure of $40,000,000 or $50,000,000, I will say at the beginning that I am inclined to favor that idea of appropriating a sufficiently large sum to carry those projects to completion in accordance with the recommendations of the committee. Now it may subsequently come along with other projects that are to be added to these. This bill contemplates the regulation of waters throughout the entire United States. It is conceivable to me that in the course of a year or two the committee can not consistently recommend works in all parts of the United States, but rather work in certain parts where we have the best information, where work would produce the most beneficial results, etc., those plans being submitted to Congress might be appropriated for generously—adequate amounts and in large sums rather than in small, specific amounts for each project because the exigencies of carrying on the work may lead to expenses between the different parts which can not be foreseen.

The CHAIRMAN. Take for illustration the Colorado River, a great disaster occurred to the people in the lower region. It involves perhaps a good, big combined possibility of flood control with irrigation—certainly on the headwaters there would be considerable impounding of the water, and I take it it could be used for the purpose of irrigation. As you understand this proposition here, would the board, out of this million dollars, make a careful study of conditions on the Colorado and make a specific report saying that, properly controlled and handled, the Colorado in its various phases of irrigation, reclamation, flood control, and whatever uses may be necessary to make of it, there should be appropriated, let us say, $10,000,000. I have no idea what it would cost. You would make a specific appropriation, then would you go to Congress in regard to the Colorado and ask Congress to approve that project and place the $10,000,000 at your disposal? Is that your idea?

Mr. Marvin. I think that is one way in which it might be done. My own idea is that the committee would recommend not only the Colorado at the end of a year, for example.

The Chairman. I am using that for an illustration merely.

Mr. Marvin. What I want to bring out is, it would be able at the end of a year to make recommendations for the Colorado, possibly for work in the vicinity of Pittsburgh or on the Ohio or on the Mississippi but more than one project could be worked up within this first year, let us assume, and then to make an estimate of cost of carrying out the works on those several projects, it might be forty or thirty million dollars, if you please. My idea would be it would be proper for Congress to intrust that whole sum to the committee for those particular projects.

The Chairman. But your report would be so divided, I take it, so that if they thought your report on the Colorado was all right that could be given, and if they thought it bad in the Pittsburgh section, they could reject that and approve the other?

Mr. Marvin. I think that would be only fair to Congress and fair to the engineers as well. The engineers make their study and submit their report, and they can not make a study of all these projects without going into detail for each one, and they have got figures for each one before they bring them to Congress. They could place those figures before Congress, and if Congress sees fit not to authorize the work in one region it could do so. That would be more or less my idea.

The Chairman. If I understand you correctly what you would favor is a thorough investigation by a board of these coordinated services, taking in the various branches of the Government, and a study and report to Congress as the result of this investigation, then leave it to Congress to say whether the various projects that you recommend are to be appropriated for or not, but when they do appropriate you think it ought to be done in a big way?

Mr. Marvin. Yes, sir.

The Chairman. If Congress approves the Allegheny-Monongahela project, you ought to be given money enough to finish it?

Mr. Marvin. Yes, sir; I think that is a fair course of procedure. And, to supplement your own statement, I should like to say it seems to me that we should take into consideration all the possible factors that enter into the regulation of any particular river. In the last analysis you can not do this work except you sit right down at each little river and tributary. Take the problem in Ohio, for example, the Scioto River. You have got to treat that as a unit in itself and work out the problems for that river. When you have that regulated, you can go to another, or when you have planned that supply to the Miami. Or take the Wabash, or some other river; you have got to work those up by units, and the engineer must have his figures for those separate amounts. In the total it makes a big sum.

Now, if Congress approved a plan for a section, the appropriation had better be made in a large sum for that general project and section. I think that is the way this can be gotten about without the necessity of appropriating a large sum that does not seem to be for any specific object, but rather let the Waterways Commission submit a definite project on which the appropriation can be made.

Senator NEWLANDS. Do you think your Weather Bureau could be of service as one of the coordinating bodies in the regulation of rivers?

Mr. MARVIN. Very decidedly so.

Senator NEWLANDS. And do you think it is a wise thing to enter upon some method of coordinating these services?

Mr. MARVIN. I think it is a needed service and an economical way of getting the result to tackle it in a broad way.

The CHAIRMAN. I believe we can hear at this time Mr. George R. Putnam, who is present.

STATEMENT OF MR. GEORGE R. PUTNAM, COMMISSIONER OF LIGHTHOUSES.

Senator NEWLANDS. What have you to say with reference to your service and its usefulness in a coordinated work of this kind?

Mr. PUTNAM. Possibly all of the Lighthouse Service is not quite so close as some of the other services you have heard from. The Lighthouse Service, however, does light and take care of the navigation on all navigable waterways of the country, including the interior rivers. For instance, we have something like 2,000 lights and aids to navigation on the Mississippi River and tributaries, and those lights and buoys and other aids must be shifted according to all the changes in the channels, hence we are very directly interested in the navigable channels of the rivers and in keeping track of all changes in those channels.

For the Department of Commerce, in a more general sense, I might say, of course, that it is directly interested in anything that will aid navigation or aid domestic commerce in the United States, and any improvements of the river in connection with navigation are therefore of interest to the department as a whole.

In regard to this bill, I met with the other gentlemen, both last year and this year, and the matter has been discussed and the general idea of an organization of this kind for the control of these kinds of work seems to me very desirable to increase the efficiency of Government work and to bring about a more efficient carrying on of such important works.

Senator NEWLANDS. What are the services of the Department of Commerce that relate in any way to rivers?

Mr. PUTNAM. The Coast and Geodetic Survey, of course, carries a controlling survey throughout the country, and that has been used very largely in connection with mapping, but that survey is represented here by Mr. Bowie, and perhaps you would like to hear from him later. Of course, the Bureau of Domestic Commerce is the bureau of that department which has particularly to do with the increase of commerce throughout the country.

Senator NEWLANDS. How about the Bureau of Fisheries?

Mr. PUTNAM. I should say the Bureau of Fisheries is directly interested in this subject, and the Commissioner of Fisheries met with our committee last year when these subjects were under discussion, and I think they would be very directly connected with the interior waterways of the country, because they are very largely engaged in improving the fishery resources of those interior rivers and lakes.

Senator NEWLANDS. In the interior rivers?

Mr. PUTNAM. Yes, sir; they have stations on the Mississippi and other interior rivers.

The CHAIRMAN. Mr. Bowie desires to be heard now.

STATEMENT OF MR. WILLIAM BOWIE, CHIEF DIVISION OF GEODESY, COAST AND GEODETIC SURVEY.

Mr. BOWIE. Mr. Chairman, the work of the Geodetic Survey, as you know, is largely making the charts for navigation along the coast of the United States out to a depth of about 100 fathoms and the survey of the Gulf Stream. That takes up most of our energies, probably 80 or 90 per cent of them, but in addition to that we have the geodetic work, which consists of extending long arcs of primary triangulation over the country, connecting up the various surveys along the coast, and also to furnish fundamental stations, whose latitude and longitude are known, on which all maps, topographic and land-office maps and State-boundary maps, or anything else, are based. For instance, along this arc, running north and south from northwest Minnesota down to the mouth of the Rio Grande, are about 1,500 or 1,800 points, each one of which is marked in a substantial, permanent manner and its description and position published, and those points are used as the control points, the framework of all surveys.

In addition to that triangulation, which really should precede the topographic and other surveying, we also carry along lines of precise leveling in from the water into the interior of the country. This work is, of course, done with the utmost accuracy and forms the framework on which all other lower-grade work is done.

The CHAIRMAN. These are made in the interior?

Mr. BOWIE. Yes, sir; start at the coast and run into the interior. One of the recent lines started at San Francisco and ran in here to Pocatello, Idaho. Another, recently started at Reno, Nev., to Las Vegas, Nev. The cause for that one line was that the Geological Survey, which had been making topographical maps in that region, had extended the primary levels into the gold region at Tonopah to converge in the three points and connect, so you had three elevations the same bench mark, with a total range of something like 10 feet. That is the disadvantage of extending the detailed control work ahead of the main control work. We checked up down to Las Vegas and checked within an inch of our previously determined elevation. You might say that was remarkable. It is, but nine times out of ten we connect within 4 inches. What we did was to connect on all railroad, geological survey boundaries, and other monuments whose elevations had been determined, and they can correct their elevations now and put them on these fundamental elevations.

What can we do for all these projects? There is not a project that you will start that will not need this fundamental work to be done immediately upon the decision that a project shall be investigated. We should carry this primary triangulation, the precise level of that area, then no matter what you do it will never have to be adjusted after the notes go to the office.

I was speaking to the chief engineer of the Southern Railroad a few days ago on this question of the value of precise level bench marks, and he told of one case where three engineers on three different occasions had gone into a certain yard in one of the southern towns and had made profiles and other leveling operations, and no two of them had used the same bench marks; the result was they had three bench marks. Well, he ordered some one to go down there and put in a conspicuous bench mark that anyone could find thereafter. We have situations out through our country pretty nearly as bad at that. The Forestry Service has to go in to make a forest survey ahead of control work. They assume a longitude or a latitude or elevation, or get it from a railroad map or a land map, or any other way. Later on the Geological Survey goes in and makes a topographical survey covering the same area. They may incorporate the forestry map in their map, but we come along after all of them—that is, in some cases—and join on to their points and find they are all wrong; then they may adjust their existing maps to this fundamental data which has been carried in there, not before it is done, but after. It should have gone before.

The CHAIRMAN. Yours is recognized as the primary?

Mr. BOWIE. Yes, sir; it is the same as the steelwork of a sky scraper. The steelwork has to go in ahead of the tile, the bricks, and the other things, and when you have the steelwork done and done accurately and adjusted, you have no trouble in making the stones and other parts of the building fit.

The CHAIRMAN. Does the law require that the other survey shall fit into yours? Is there any provision of law, or only custom?

Mr. BOWIE. No, sir; it is just a sort of unwritten law, and in all those organizations they have engineers who realize the necessity for doing so. After a draftsman, for instance, has tried to compile a post-route map from dozens of individual surveys of a State, no two of which are on the same datum, why he is going to use this material without anybody having to order him to do so. He finds it absolutely necessary for proper control.

The CHAIRMAN. You really make every part of the country fit into every other part, I take it? In other words, your map is comprehensive from ocean to ocean and from Gulf to Lakes?

Mr. BOWIE. Yes, sir; I can say we do no topographing in the interior. This is only the establishment of points. We get the accurate elevation and accurate longitude and latitude, then other organizations, such as the Geological Survey, the Forest Service, and the Engineering Department, and others, come on afterwards with their detail mapping, and they carry what we call a secondary control out from our fundamental points, 40 miles, 50 miles, or whatever miles are necessary, to where they are making a detailed engineering survey or map, or doing dredging, building dams, etc. But they like to tie on to some of these fundamental points so they will never have to adjust their control maps to later maps that will be on the fundamental basis.

I should like to say this: In the Congressional Record of a few days ago there was a speech of Dr. George Otis Smith at the centennial of the Coast and Geodetic Survey, in which he referred to the very close and satisfactory cooperation between the Geological Survey and Coast and Geodetic Survey. It was reproduced in the Record a few days ago. Now that is absolutely voluntary on the part of the officials of the two organizations. We do not run a single line of that precise leveling or primary triangulation without going up to the Geological Survey or having one of their officials come down to our bureau, and we tell them what we propose to do. We will say, "We have this plan; we want to do this work within the next few years. Which would you prefer to have done first?" They tell us, and we meet their wishes as far as we can. That is because the officials of the two bureaus are friendly. If they were not we should not like to go into their office, and they would not like to come to ours, and the chances are that, in roundabout ways, we might find out they wanted the work done in a certain locality first, but we could not have that cooperation.

In this bill it seems to me the cooperation would be very satisfactory. In other words we would have to cooperate, and the great trouble to-day is that each bureau sees its problem, sees that it has got to collect certain data, and probably think they can collect it within the next 40 or 50 years; each bureau decides for itself the area in which it should collect data first, and the result is there is not one single one of those projects, I venture to say, that has complete data of all the bureau, while if this commission or council were in existence they could say, "Let us take the Columbia River Valley and clean it up—do some work in the others, of course, but let us this year and the next year make our maps so we can give real engineering specifications for certain work." The only way to get that is for some organization to call on the Coast Survey, the Geological Survey, or the Weather Bureau or the Fortestry, and say, "You do this this year, this next year, etc.," and it seems to me that would be an engineering proposition. That is the way a business concern, such as the Du Ponts, would do if they were working along this line. They would have a group of men and decide what they should do. They would not have a department of their corportation say, "We will go out and collect the rainfall in Maryland," another to say, "We will make maps in Pennsylvania," and another one somewheres else. It does not seem to me that is good coordination.

Senator NEWLANDS. I imagine it would be a great satisfaction to all these scientific services, to have the consciousness that they were collaborating in the great work?

Mr. BOWIE. Yes, sir; it would be a great satisfaction.

Senator NEWLANDS. Instead of each pursuing its individual work without knowing certainly that in the future all would be brought together in the accomplishment of a great work.

Mr. BOWIE. I think they would welcome it very heartily.

Senator NEWLANDS. It would produce a better spirit?

Mr. BOWIE. Yes, sir; very much better. They would know each other better, too, by the fact that they worked with each other.

The CHAIRMAN. Have you found any duplication of effort between the various bureaus of the departments of the Government?

Mr. BOWIE. I would not call it duplication, Mr. Chairman, so much as I would wasteful effort. For instance, here is just one case: We have a small appropriation for this interior work. Now we go out and do the best we can and extend this work as rapidly as we can. Here is the Geological Survey has to make a topographic map in an area where this fundamental control has not yet entered. Well, they make their map; they may have to change their scale; there may be overlaps and gaps after we have extended that fundamental control. Now, it would be a great saving, a good big per cent of the total appropriation spent for them and for us, if we could have the two bureaus with their appropriations in coordination, such that whenever they went to work in a certain area, we would have funds to go in there ahead of them. That is the point. In other words we are rather loosely corelated. We do not do any of their topographic work; they do not do any of our triangulation.

To-day we are running a line of levels up in Michigan. We should have done it last year. Their topographical parties are in Michigan to-day working just ahead of our levels. The result is they have assumed some elevations, may be a foot or two, out. We are coming along and tie to them. Now, last year they knew they were going to work in Indiana and Michigan. If they had told us they would like very much to have the fundamental elevations in there by May, we would have got them in there and saved them a good deal of money. There is a certain lack of coordination. You can see the principle involved, but there is no duplication between the two bureaus. They do not do any of our work, nor we theirs; but if the two bureaus were under one head and had sufficient pliability in the expenditure of our funds we could get along a little better.

Senator NEWLANDS. Have you been abroad at all and observed the water systems of France and Germany, Austria, and Russia?

Mr. BOWIE. I know very little of the interior water control of the different countries. I was on the hydrographic and topographic work of our coast a number of years, but I had nothing to do whatever with the control—with river and flood control. All I know is the whole of Europe, except Russia, is controlled with a triangulation and leveling to such an extent you have to go but a very few miles to get to a fundamental point. They would think it a great waste to have to make a map ahead of triangulation—leveling, for instance. So that they have accurate maps.

What you will need for this control work is a system of accurate Geological Survey topographic maps—maps that are based on proper triangulation and leveling, that show the streams, roads, contours, those features that we see, and then all of the other organizations, like the Forestry Bureau, the Bureau of Soils—and other people can use those base maps and show on them by colors, or otherwise, what they have in that region. In fact, you can indicate on there the value of land that is going to be flooded and all the other kind of things. Without those maps you might as well guess $5,000,000 as well as $50,000,000 as the cost of a certain project. You can not tell.

But the map is absolutely necessary, and it is not only good for this immediate purpose, it is good for years to come. This work ought really to be pushed to a rapid conclusion.

Senator NEWLANDS. What do you regard the value and present necessity, as compared with other things, of the work that is outlined in this bill with a view to developing the natural resources of the country, including water and forestry and irrigation and reclamation, as plants developed into water power? Do you know of any public work of any greater importance?

Mr. BOWIE. No, sir.

Senator NEWLANDS. Do you know of any of equal importance?

Mr. BOWIE. No, sir; I do not. I think, as compared with your river and harbor improvements, this should take precedence. Certain harbors ought to spend 10 times as much as you do and others should not spend any. But this work, I believe, is going to save life and property and also add much to the food production of the country. It seems to me it is of fundamental importance.

Senator NEWLANDS. Regarding these flood waters. Do you regard it of great importance that every effort should be made to beneficially use them and to prevent their destructive uses?

Mr. BOWIE. Of course it might come to an absurd condition where you would have to spend $10,000,000 to protect $1,000,000 worth of property. In cases like that, we should, of course, not consider it. But if the saving of property is at all commensurate with the cost, I should say we ought to undertake the work if it is feasible. And of course the power and water purification are very necessary and you should utilize it in every way possible.

Senator NEWLANDS. We are much obliged to you.

The CHAIRMAN. Dr. William A. Taylor will be heard next.

STATEMENT OF DR. WILLIAM A. TAYLOR, CHIEF OF BUREAU OF PLANT INDUSTRY.

Dr. TAYLOR. The relation of the work of the Bureau of Plant Industry to the control of river flow is substantially that of agriculture to the control of floods and rivers. That is to say, it involves the question of the relation of agricultural practice to run-off of water, and in the humid portion of the United States agriculture has thus far in the main endeavored to get the water to run off as rapidly as possible with particular regard to the effect below, so that our agriculture has developed generally upon a basis of accelerated run-off, whereas river regulation involves primarily, as I understand it, the retardation of run-off.

Neither the Bureau of Plant Industry nor other elements of the department have given definite consideration to the relationship of farming to run-off. Our work has been devoted specifically to the other side of the problem, namely, to the development of the largest practicable production of crops at the least cost, with conditions as they exist, and under general practice as it is. But the need for a saner policy and a longer view is sufficiently evident, I think, to be approved in relation to this general proposal.

At present the agricultural investigators of the country in the main devote themselves to ascertaining whether a particular piece of land can be made productive. It may be muck land in a marsh. The question that the investigator is to solve is whether through drainage that marsh can be made to earn a profit for the man who reclaims and operates it. It is quite clear that, as Mr. Davis mentioned this morning and Mr. Newell mentioned, that there may be cases where, although the marsh could be made to yield a large profit, it might be made to return a fair profit under a different type of agriculture not involving quick drainage, nor drainage at all, if the means were worked at from that angle. This is work that has not been undertaken. I merely suggest it as one of the features that require attention.

Even in the utilization of the lands that have been cleared and that are now in farms, little attention has yet been paid to the placing of the pastures with reference to the effect on run-off, to the contouring of both pasture and the cultivated land. That, of necessity, will be largely effective through the education of the farmer, and it should not be possible until there is a sufficiently definite determination of the actual relation of such practice to the farmer's pocketbook, that he can see that it is worth his while to contour his fields or to place his pastures where they will hold rather than to immediately release the rainfall so that the portion of the field of investigation, which is not now provided for, that I suggest, is that portion of the field of agricultural investigation which bears directly on the question of the most economically sound utilization of the farm lands, taking the long view; that is, essentially in the control of the flow of the river.

We speak in general terms. We lack exact data. The question has not been studied. We see in places the truth existing so clearly that it is accepted as sound and do not undertake to prove it through accumulated records and facts. I think that is a fair statement of what the present situation is.

But any program that would contemplate a control of the rivers must include the relation of agricultural practice to run-off. Take this map as it stands, it shows approximately the forest and non-agricultural lands in this portion of the country, leaving the large proportion of the total area agricultural land, more or less intelligently used, until relatively recently farmed without effort to check erosion; somewhat recently and gradually developed by the farmers themselves by systems terracing, the Magnum terrace, which was developed here in North Carolina, and other devices not at all protecting the rivers, but for increasing the productivity or maintaining the productivity of the agricultural soil, but which has a direct bearing on this other feature.

Senator NEWLANDS. They have the effect of retarding the water on its way to the rivers?

Dr. TAYLOR. Of retarding the water and of accomplishing a beneficial use.

Senator NEWLANDS. Did you wish to go on further with your general statement?

Dr. TAYLOR. I think not, unless it is desired.

Senator NEWLANDS. Just in that view, outside of the matter of artificial storage in great storage reservoirs, which, of course, can only be accomplished where the topography of the country will permit, do you not think it possible to produce in agriculture such a retarded condition of the run-off of the waters as may fall from the heavens as to mitigate quite effectively the violence of the floods and at the same time put these waters to a beneficial and productive use?

Dr. TAYLOR. We know that that can be accomplished in restricted areas and in specific instances through the mere slight readjustment of present practice. We believe that a great deal more than that can be done by determining, for example, what crops could be handled with least damage by an occasional overflow in such a checking reservoir as was mentioned this morning; that is, what type of agriculture could be developed with least risk of destruction of energy of effort and capital and labor by the flood that comes at 20-year intervals or that occurs at some other long-time interval.

We have not anything specific. It is clear, however, that the general result could be accomplished, and that eventually it must be accomplished if we are to maintain the largest productivity of our soils. But we do not know how to tell the farmer to-day. You can, by expending so much money in controlling, increase your productivity so much or maintain it, meanwhile contributing to the general good to the retardation of this destructive run-off. There are many things that we do not know that we need to know that we will ultimately depend upon. We are not in shape to dogmatize, in other words.

Senator NEWLANDS. And you think that it is quite important that there should be a step in that direction?

Dr. TAYLOR. I think it is essential to such a readjustment of agriculture as is absolutely essential to permanent control of stream flow in our humid country, where most of our land will be devoted to agriculture.

Senator NEWLANDS. Take our entire Mississippi Valley, including its tributaries, do you think we have reached anywhere near a possible standard of efficiency in agriculture?

Dr. TAYLOR. We have overrun, but we have not yet occupied, as some one said, in that matter. We have not adjusted.

Senator NEWLANDS. You have a large area covered, but within that area you have not by any means reached the high standard of efficiency you hoped to reach, have you?

Dr. TAYLOR. Not at all.

Senator NEWLANDS. As I understand it, water constitutes a very large percentage of every natural product, does it not?

Dr. TAYLOR. Every plant product, certainly.

Senator NEWLANDS. An every animal product?

Dr. TAYLOR. And every animal product.

Senator NEWLANDS. 75 per cent, I presume?

Dr. TAYLOR. Beyond that in——

Senator NEWLANDS. Therefore, it is quite an important element in all of them, in both animal and plant products?

Dr. TAYLOR. Yes, sir.

Senator NEWLANDS. Suppose that 100 years ago you had had all these various scientific bureaus organized, including the Corps of Engineers of the United States Army, and you determined not only to make these rivers useful for transportation, but to mitigate the destructive effects of water and to promote the beneficial uses of water by putting as much of it as possible into plant and animal products. Do you doubt at all that by this time this whole thing would have been solved?

Dr. TAYLOR. If we had had something to live on during the time when the forests needed to be cleared and the land put under cultivation. Certainly, had our agricultural development proceeded under the basis of a plan, that is of any plan, we should be in a very different situation than we are now. It has proceeded, of course——

Senator NEWLANDS. In an accidental way?

Dr. TAYLOR. That is, without any plan which took into account more than the farm that the farmer was chopping out of the woods and clearing up and draining and putting to use. There has been no plan even for a single township or district, so that it has developed without regard to the general public interest almost entirely.

Senator NEWLANDS. Your idea, then, is that it would be a beneficial thing for the Agricultural Department, and particularly for that part of agriculture represented by your bureau, to coordinate effrots to control the waters of the country for beneficial uses and to prevent their destructive effects if such a project were entered upon?

Dr. TAYLOR. Yes, sir; not only with reference to the direct work of the Bureau of Plant Industry and of the department, but also, and perhaps even more important, the affording of a sort of nucleus around which there could be crystallized that interest in the subject through the States and the State experiment stations and the State agricultural colleges, those agencies which now, to a large extent, shape our agriculture in its transition period, which at present is lacking. We see an occasional bulletin, illustrated with photographs of excellent examples of profitable control, but in large part it glances off because there is not any pressure behind it, or any follow-up or systematic campaign.

The CHAIRMAN. Will you kindly explain what you mean by that? I do not quite grasp the idea, Doctor, how you get so much better results. We give you practically all the money now that the department calls for to do anything on earth the Agricultural Department wants to do. Suppose you had this coordinating, this cooperating organization; would it work out practically better than it works now?

Dr. TAYLOR. As it stands at present, the department has not in its crop work given attention to this question at all, except in a very incidental way. The program of the department as it stands does not definitely include it. The program of the department provides for specific investigations of particular crops; provides for specific investigations of soil fertility; of forest problems. It does not, and never has, included any definitely crystallized provision for attention to this subject.

The CHAIRMAN. But you have tried to do everything that would benefit agriculture, have you not?

Dr. TAYLOR. To the extent that our program has included it. There is much remaining to be done for agriculture, Senator, that the department has not yet undertaken.

The CHAIRMAN. But you have undertaken everything you could think of, have you not?

Dr. TAYLOR. No, sir.

The **Chairman**. I thought Congress had always given the Agricultural Department whatever it needed. I never heard of an appropriation being turned down to the Department of Agriculture. You have gone by leaps and bounds. If you had intimated you needed money for this purpose, you would have gotten it.

Dr. **Taylor**. Congress certainly has been generous with reference to the Department of Agriculture.

The **Chairman**. There is no doubt about that. You are our pet—if we have a pet it is the Department of Agriculture—and if you had just told us you needed the money for these things I think we would have given it. I am not inclined to be critical; I am just wondering, as a practical proposition, what you could do that you have not done if you had this organization to promote agriculture. I can see the possibility that it might have something else to do with the floods. I can see it might hold back some of this water from floods, but how on earth would you help agriculture any more than you have?

Dr. **Taylor**. The question there might be expected to work out somewhat in this way: That definite agencies would be made with a view to determining the exact facts, expressed in terms of inches of rainfall and bushels of corn and dollars in sales in relation to cost and readjustment method of handling of the soil, of placing crops, or rotation of crops—that is, of developing such a rotation of crops that would reduce the erosive run-off to a minimum without adversely affecting the farmers' pocketbook. There would be concentration upon that problem with a view to securing exact facts that could be used with the farmer, that could be put up to the farmer fairly on the basis of definitely established conclusions.

The **Chairman**. You could not tell him anything more about the amount of water that was going to fall from the heavens than you can tell him now, could you?

Dr. **Taylor**. No; though the important thing is to be able to tell him how to control the maximum that he reasonably must expect to take care of.

The **Chairman**. He has got that maximum now, the Weather Bureau has had that for years?

Dr. **Taylor**. But it has gotten that from him and nobody knows the best ways of controlling under the varying conditions. In some sections that is fairly well worked out and adopted in practice, and on some farms in some places, but there is a large field remaining for work to be done yet.

Senator **Newlands**. I suppose the question of soil erosion is a question of great interest to your department, is it not?

Dr. **Taylor**. Necessarily so; yes, sir.

Senator **Newlands**. Yet you have not been able as yet to take hold of that in a big way, have you?

Dr. **Taylor**. Practically all that has been done has been incidental to other lines of investigations that have been specifically authorized.

Senator **Newlands**. Practically you have only taken hold of it in detached places, I imagine?

Dr. **Taylor**. Yes, sir.

Senator **Newlands**. Never as a big problem, involving an entire watershed?

Dr. **Taylor**. No, sir.

Senator NEWLANDS. For erosion means the drifting of the soil into the rivers and ultimately be deposited in some bay, gulf or the ocean, does it not?

Dr. TAYLOR. Yes, sir.

Senator NEWLANDS. And that means the loss of that soil?

Dr. TAYLOR. Yes, sir.

Senator NEWLANDS. Now, take your wet lands. Take this vast area of swamp land constituting the Mississippi Delta. Suppose that——

The CHAIRMAN. Do you mind calling that forest lands?

Senator NEWLANDS. Well, I will call it anything you want me to.

The CHAIRMAN. Call it forest; it is not swamp.

Senator NEWLANDS. It was swamp once, was it not—the Delta?

The CHAIRMAN. There is some swamp down next to the Gulf of Mexico, but all the great region of the Mississippi River that we are trying to protect from the floods is not swamp at all; it is forest; it is covered by tree growth. There are very, very few marshy places, very few places you could apply the term "swamp" to.

Senator NEWLANDS. I am speaking of the lands that went from the National Government to the States under the designation of "swamp" lands.

The CHAIRMAN. That was called "swamp and overflowed lands." That term "swamp" is a misnomer.

Senator NEWLANDS. What was the area?

The CHAIRMAN. I could not tell you. It is quite large, not only in the Mississippi Valley but all over the United States.

Senator NEWLANDS. But in that region?

The CHAIRMAN. From Cairo down, something like 29,000 square miles, and in the whole overflowed Delta of the Mississippi—that is, in the neighborhood of 18,000,000 acres, I take it—but a great deal of that, of course, has been improved, and a great deal covered by very fine forest growth. There is really not a great deal of what you call swamp.

Dr. TAYLOR. It is land which is all right during 50 weeks of the year; sometimes all the year.

The CHAIRMAN. Then those lands are covered with overflow water, but not with water all the time.

Senator NEWLANDS. We will not call it swamp land, then; we will call it land subject to overflow.

Dr. TAYLOR. That, I think, would accurately describe it.

Senator NEWLANDS. And there are nearly 20,000,000 acres of land of that kind. Now, assume that we had started 50, 75, or 100 years ago to treat that land scientifically, both from an engineering and agricultural standpoint, for the development of food products, animal products, and forests, etc. Do you not think there would be very much better results than there are now?

Dr. TAYLOR. Of course, that depends, Senator, very largely—that is, the practicability of doing that—depended then and depends now very largely upon the economics of it. I believe that a well-balanced, comprehensive plan of control, systematically prosecuted and put into effect, would eventually accomplish a very large increase in the productivity, the agricultural productivity, of that territory. How long it will take, what it will cost, what the ratio of product to cost will be, no one can say, but I think——

The CHAIRMAN. Would not the same thing apply to every acre of agricultural land in the United States?

Dr. TAYLOR. Yes, sir; had it been developed to a plan that took into account the knowledge that existed at the time that it was pioneered; yes, sir.

The CHAIRMAN. Suppose our agricultural lands were subjected to the same system of intensive cultivation the Germans have used toward their lands, would we not get two or three times as much as we now get from agriculture?

Dr. TAYLOR. If we had the same wage rates and the same relation of living cost to type of development. I think, however, we must take into account the fact that our agriculture has developed along lines very different from theirs and must for a considerable time, at least, continue to be different, through its recognition of the fact that there are cheaper powers than man power under our conditions.

The CHAIRMAN. Do you know of any system prevalent in Europe, or anywhere on earth, similar to this, that this bill contemplates getting up here, where there is coordination and cooperation of all the agencies of Government, and where, as a result thereof, mankind has been enormously benefited?

Dr. TAYLOR. No, sir; I do not know of such.

The CHAIRMAN. And efficiency has been promoted?

Dr. TAYLOR. I do not know of any case where the stream flow of a country has been taken in hand and worked out, though there may be such.

The CHAIRMAN. Maybe we can pioneer for the world in that respect?

Dr. TAYLOR. We have had to pioneer in some other things, and this appears to be sound.

Senator NEWLANDS. You regard this question of the relation of water to production generally as a very important one, and one that ought to be studied thoroughly, do you not?

Dr. TAYLOR. Yes, sir; as of fundamental importance.

The CHAIRMAN. We are much obliged to you, Doctor.

Senator NEWLANDS. The Chief of the Bureau of Soils has prepared a brief statement bearing on the relation of flood control to soil problems, and I will ask that this statement be inserted in the record at this point. It throws additional light on the subject of soil erosion, to which Dr. Taylor has referred in his statement.

(The statement of the Chief of the Bureau of Soils will be found printed in full as Appendix "A" on page 73.

Senator NEWLANDS. Mr. Chairman, I had hoped that Mr. Lyman E. Cooley, the noted engineer of Chicago, would be able to appear before the committee and present his views regarding a system of river regulation involving source control and development, as well as bank revetment and levee protection, and including the highest profitable utilization of flood waters in irrigation, forestry, intensive cultivation, and water-power development. Mr. Cooley, however, is unable to be here. With the permission of the chairman I will have inserted in the record the statement of Mr. Lyman E. Cooley substantially as it was made before the Flood Control Committee of the

House, and in support of Mr. Cooley's views with reference to the importance of revetments as a means of maintaining the navigability of the Mississippi River, append to Mr. Cooley's statement a communication from Maj. T. G. Dabney, which was presented to him at a hearing of the Committee on Rivers and Harbors of the House on December 3 and 4, 1913.

I will also add, with the consent of the chairman, statements of Mr. Lyman E. Cooley (Appendix B), Mr. George H. Maxwell (Appendix C), and myself (Appendix D), upon the subject of river regulation and flood control, and ask that they may be printed as an appendix to this hearing.

The CHAIRMAN. It is so ordered.

(The statements referred to will be found printed in full as follows: Appendix B on page 75, Appendix C on page 105, Appendix D on page 141.

The CHAIRMAN. The committee will now adjourn.

Thereupon, at 5 o'clock p. m., the committee adjourned subject to the call of the chairman.

APPENDIX B.

STATEMENT OF THE CHIEF OF THE BUREAU OF SOILS.

SOIL INVESTIGATIONS IN RELATION TO CONTROL OF FLOOD WATERS.

A flood condition presages the precipitation of water more rapidly than the soil is able to absorb it, and the consequent accumulation of excess water into sheets, rivulets, and streams. The amount and rate of surface run-off is influenced by a number of soils factors, such as the physical character and condition of the soil, the slope, and the vegetal covering. Certain soils under excessive rainfall show marked susceptibility to erosion. Streams flowing through regions containing such soils may carry a heavy burden of silt and débris. Erosive material from some soils will carry farther than from other soils. Erosive material will carry farther in some waters than in other waters.

A soil survey of the watershed, accompanied as it is by laboratory investigations, would reveal the physical character and condition of the soil, showing the texture and structure of the soil, would indicate the presence of hardpan, would show the absorptive capacity of the soil for water, the character of the vegetal covering, the susceptibility to erosion, and would indicate the drainage and topography of the country. This data would indicate the relative capacity of the different soil types for furnishing a reservoir for rain, would reveal the areas of excessive erosibility, and would indicate the needs and remedial measures required to put the different soil types into the best possible condition for the ready absorption of the rainfall and to prevent as far as possible excessive amounts of water and of silt material from finding their way into the streams and rivers.

Methods of control through soil management and by soil cover of flood waters and of the silting of streams differ with the character of the soil, the topography, and the use to be made of the soil. Wild areas or areas not now being utilized for crop production should be kept in forest or in grasses for hay or grazing purposes. If peculiarly susceptible to erosion special treatment may have to be followed to secure the desired needs. Steep slopes should not be cleared of native growth without due consideration to the results that are likely to follow. Steep slopes that are now without sufficient native cover may require intelligent planting.

The treatment of cultivated areas where the slope is great or where the soil is not naturally sufficiently absorptive of water should be planned with reference to the possible injury from flood and to the possible excessive erosion of the soil under flood conditions. Continued clean cultivation over large areas is notoriously conducive to erosion. The introduction of cover crops, particularly winter cover crops, is desirable and often necessary to make the soils more absorbent and to prevent excessive erosion. The method of contour farming is a fundamental necessity on certain soil types having only a moderate degree of slope. On certain soils care should be taken with the first evidence of erosion to use brush or stone obstructions to prevent the formation of new and excessive drainage ways. The use of land near the streams for hay or pasture rather than for cultivated crops to form a catch basin is indicated.

There is a great deal of evidence to show that without intelligent care in the handling of soils and of the soil cover that flood damage and the silting of streams is increased and, conversely, that with careful and intelligent handling of the soil and of the soil cover that the damage from these causes may be greatly reduced.

State and municipal governments under State laws regulate and control the drainage districts of their water supply for domestic purposes. The Federal Government, through the Office of Engineers, already controls many mining operations, the building of bridges, wharves, jetties, and all artificial operations of like character to prevent the excessive silting of streams, and it is at least conceivable that such supervision might very well be exercised in the interest of the general good where farming operations are known to be unfavorable to the control of flood waters or to the excessive silting of streams and rivers.

APPENDIX C.

STATEMENT OF MR. LYMAN E. COOLEY, OF CHICAGO, ILL., BEFORE THE COMMITTEE ON FLOOD CONTROL OF THE HOUSE OF REPRESENTATIVES.

Mr. COOLEY. Mr. Chairman and gentlemen of the committee, I came to Washington on the most innocent mission in the world, and found myself conscripted for this hearing without proper or adequate preparedness. I would have been glad, in justice to the committee, to the subject, and to myself, to have spent two or three weeks in indexing my mind and refreshing my memory in regard to the particular matters which I am called upon to speak to you about.

Something has been said about my achievements. I do not know whether the speaker mentioned the matter seriously; he probably expects me to submit the proofs, rather than to admit it.

I graduated at the Polytechnic School at Troy, N. Y., in 1874, with the degree of civil engineer, and have been in the practice of my profession 42 years. Last year I was honored with the degree of doctor of engineering by the University of Michigan for special research and achievements in the domain of our water assets.

During my lifetime I have been professionally identified with every division and section of a waterway from the Gulf of Mexico to the Gulf of the St. Lawrence, and to New York Bay, and also with problems relating to many of the tributaries of such a trunk waterway.

On the eastern part of the route, in connection with the Great Lakes, I made a study as early as 1888 and 1889 in relation to the proposed diversion at Chicago. In 1896 and 1897 I was on the International Waterways Commission, which compiled and brought together all the information in regard to routes leading from the Great Lakes to the Atlantic seaboard, our instructions being to consider the effect upon the transportation interests of the country of extending ocean navigation to the head of the Great Lakes and making them virtually arms of the sea.

In 1898 I was the advisory engineer of the investigating committee on the canals of New York, and became personally familiar with the water system of New York State, representing some 700 miles of internal waterway development.

Within the last four or five years I have had occasion to review for the city of Chicago and the sanitary district of Chicago, in an elaborate report, the problems of the Lakes as sources of supply for low-water navigation on the Illinois River and the Mississippi River in connection with the diversion at Chicago. I have also been one of the leading experts in the Federal courts upon that subject.

Coming to the other division of the route, I was for six years connected with the Missouri River work, with assignments on the Mississippi River, and with the research division relating to all the tributaries of the Mississippi River—the Ohio, the Cumberland, the Red, the Missouri, and others.

Following that I was the projecting engineer of the Chicago Sanitary and Ship Canal, in 1885, and my labors were almost continuous there for the following 12 years. I prepared reports upon the Illinois River problems for both the State board of health and the city of Chicago. In fact, I have been identified with the problems of the city of Chicago for more than 40 years, or more than half the time since Chicago was a settlement. I have seen the city grow—an increment of population of more than 2,000,000—have seen it multiply its population by more than five times.

I have made studies of other rivers of Illinois. I wrote the report as consulting engineer for the Internal Improvement Commission of Illinois, and I prepared three separate reports in regard to the Lakes to the Gulf waterway, and was the consulting engineer of that organization for a number of years, and appeared here in Washington in their behalf on three or four different occasions at hearings before committees of the Senate and House of Representatives.

I was the projecting engineer of the water power development at Keokuk from 1900 to 1905, and in that connection made a complete study of our water resources on the upper Mississippi River.

I was consulting engineer of the Union Water Co. at Denver for a number of years, and supervised the construction of the highest dam in the world at that time, a dam 225 feet in height, in the South Platte Canyon district.

I have been consulted on a number of water power and flood problems. I have reported upon flood questions in four rivers of Michigan—the Grand, the Huron, the Saginaw, and the Muskegon, and also upon water power problems in those streams; also upon the Genesee River in the State of New York in connection with the barge canal in that State, and in relation to floods which, at times, have done great damage in the city of Rochester.

In 1898, I made a visit to Panama and Nicaragua for a group of financiers and contractors, and spent about a year in the preparation of plans for the building of a canal at Nicaragua, which probably would have been carried out had not the conditions arising out of the Spanish War made it a public enterprise, and taken it out of the domain of private investment.

In 1899 I undertook for the Deep Water Board an economic investigation of freight producing resources in relation to water and rail rates, for the purpose of disclosing what influence the extension of ocean navigation to the head of the Great Lakes would have upon transportation conditions in this continent, both in the United States and in British North America, and its relation to the soil and food-producing resources of this continent, north of Mexico.

I made a visit to Europe in 1909 as a sort of auxiliary to the National Waterways Commission, and inspected the Rhine and some of the Rivers of France, the Kiel Canal and the Manchester Ship Canal, in order to discover the genius—the reason why these waterways abroad are such a potent economic factor.

I will not go into further detail. I was once unfortunate in that respect. I was told to qualify fully in a talk I made before the Commerce Committee of the United States Senate in 1910. One of the

Senators was overheard to remark that he did not take any stock in it because no one man could have done the things I told about.

I had the honor in May, 1908, to assist the governor of my State in the conference of governors at the White House, and at that time I made a speech, or rather got leave to print one, of which I am quite proud. It is not a long speech. I took the position that the water resources of this country, the surplus waters running to waste, were next in value to the land, and above all other resources except the land itself. With the indulgence of the committee, I propose to devote some time to the consideration of that general proposition, the development of the relation and the value of water resources as a national asset.

How far the uses of the water for irrigation will affect the supplies for water power and navigation in the Columbia River Basin and the Missouri River Basin has not been worked out, but I assume that it is a mere matter of degree, and will not change the character of any problem or its proper solution. For this reason, and for the further reason that the irrigation question has been separately taken up, I did not cover the subject in my general presentation, although I recognize its place in any complete statement respecting our water assets.

(The speech of Mr. Cooley at the conference of governors at the White House, above referred to, is here printed in full as follows:)

OUR WATER RESOURCES.

[Speech of Lyman E. Cooley, C. E., at the conference of governors of the United States, 1908 proceedings.]

Our surplus waters are next in value to the land; they are self-replenishing, renewing themselves in the seasons and throughout the years; they are a part of the public domain which has never been segregated, and should be forever held for the use of the people in common.

From the point where they come to earth, in their descent to the sea, they develop energies many times greater than can be produced by high-grade engines from all the coal mined. Through water conservation it should be practicable to realize actual horsepower in excess of what can be produced by all the coal mined in the United States to-day.

Water conservation demands storage, and 4 to 6 per cent of the area in reservoirs will equalize the flow of streams. By fish culture, such reservoirs will have greater value than the land taken. They add to the landscape and make places of recreation for the people.

Floods will be abolished or mitigated, thus reclaiming the wealth in alluvial lands along the watercourses and making the valleys salubrious. The flow of streams will be equalized and made navigable throughout the year, even to the remote reservoir sites, and by improvement of these natural channels and by connecting the water systems at vantage points, a great transportation agency will be evolved as a complement to our railway system, and as a necessity for our larger growth and complete development.

Forestry becomes the incident of water conservation and makes wealth out of the waste lands which have no better use.

Thus through water conservation we may develop power in every region where people can live, and prolong the life of our coal mines throughout the generations; protect from floods, reclaim the wealth in alluvial lands by the waterside, and make the valleys healthful; produce a great transportation system, such as is necessary to realize our destiny, and create wealth in fisheries and in forests from land which has no better use. The remedy is far-reaching and automatic, and thus lends itself best to the nature of our institutions.

MISSISSIPPI VALLEY.

The Mississippi Valley, as a geographic and economic entity, spreads broadly out between the Rocky Mountains on the west and the Alleghany Mountains, the Niagara frontier, and Hudson Bay on the east, and extends from the Gulf of Mexico to the northern ripening limit of barley and the potato. It has a general breadth of 1,300 miles and a general length of 2,100 miles, and an area of 2,765,000 square miles, or more than that of all Europe.

In recent geologic time, a greater Lake Winnipeg spilled its waters across the northern divide to the Mississippi at less than 1,000 feet of altitude, and the Great Lakes also spilled their waters across the Chicago divide at less than 600 feet of altitude; and these ancient outlets define the lowest continental lines and the base routes for a waterway system. These three basins, in their present drainage, comprehend 72 per cent of the area of the Mississippi Valley, the remainder being distributed in three remnants of direct drainage to the Gulf of Mexico, Hudson Bay, and Mackenzie River.

The economic or potential value may be estimated in terms of the average humid territory of middle latitudes. Making due allowance for the semiarid region, the sterile rock of the northern highlands, and the margining out in value toward the barley and potato limit, the equivalent value is taken at 2,000,000 square miles in round numbers. This is five times or more the combined areas of France and Germany, and will carry a population five times as great, or 450,000,000, and perhaps double on an ultimate development.

The Atlantic, or Eastern Division, comprehends an area of 885,000 square miles, with a value of 600,000 square miles. The Pacific Division, west of the Rockies and north of Mexico, comprehends an area of 1,480,000 square miles, with a value of 540,000 square miles. The total area of the three divisions is 5,130,000 square miles, with a value of 3,140,000 square miles. Of this total the Mississippi Valley represents 54 per cent in area and 63 per cent in value.

If a sea margin be set off comparable to that for the Atlantic and Pacific, the continental interior is the larger half of the total value, more than four times Germany and France together, with its margins farther from the seaboard than the most remote sections of either of the countries named.

CONTINENTAL INTERIOR.

The four countries of northwestern Europe contain 18,920 miles of improved waterways in an area of 449,000 square miles, ranging from 1 mile of waterway for 26 to 29 miles of territory in France and Germany to 6 miles of territory in Holland and Belgium. The waterway development in France and Germany proceeds on the basis of about 1 mile of waterway for each 25 miles of territory, while the railway development, largely under State control, represents 1 mile of railway to 8 miles of territory. Already certain sections of the United States have a mile of railway for each 4 to 6 miles of territory, with a population density of one-fourth to one-third.

Take any unit area in the continental interior, as the combined area of Illinois, Wisconsin, Minnesota, and Iowa, an area greater in natural resources, with better topographic conditions, than either France or Germany. Such an area in its domestic traffic, in its relation to other unit areas, and in its connection with the seaboard, will require some three times the railway mileage that would be required were it margined by the sea, like France or Germany.

More than one-third of the commodities moved by rail cost less than $1 per ton at the point of production, more than half are under $2 per ton, while about two-thirds are worth less than $5. To develop the dormant and ultimate resources of the interior is utterly hopeless under such conditions, nor can such area maintain world competition with more favored nations.

THE WATERWAY SYSTEM.

The interior can not go to the sea, but for all practical purposes the sea can be carried into the interior. The continental base lines can be developed for ships if we like, south to the Gulf, east to the Atlantic, and north to Hudson Bay, and each unit area, like France and Germany, will lie along a virtual sea front.

Great tributaries and the many laterals can be improved and connected at vantage points in loops and circuits, and the wealth in either valley slope may thus interchange and gravitate to the common artery.

The Mississippi Valley has some 25,000 miles of waters which have been actually navigated. On the basis of France and Germany, this should increase to 80,000 miles for the potential area. With such a waterway system 250,000 miles of railway should be sufficient to meet the needs of a population of four to five hundred millions in the Mississippi Valley. The greater efficiency of American railways and the larger scale of a waterway system will discount any superior activities of our people.

Considered as a matter of cost, the combined system will be far less, and considered in relation to results, the wealth to pay for the same will be far greater.

CONCLUSION.

The typical American of the generations to come will express the environment, the boundless opportunity, and dominion over nature in the Mississippi Valley. This interior is the assembly ground of all the divers types of the Aryan race that swarmed from the parent stock in Central Asia thousands of years ago. Coming through many lands with widely varying climatic and soil conditions, strange experiences, and multiplied heredities, they are to here coalesce in the final race type.

Here the genius of the race may flower and mature its fullest fruits, secure behind broad margins of ocean boundary from the alien race wars which rolled our ancestors up like a scroll. Here may develop a civilization such as the world has not seen, and issue forth through its ocean portals to dominate the world.

Mr. Cooley. The relation of the several divisions of our water resources as a national asset is such that I do not see—and I have come to the conclusion gradually—how you can develop any one of these elements alone without the danger of blighting the others; in other words, the problems are so related that the stream system with its potential resources must be handled as a whole.

That, as I understand it, is the general purpose of the Newlands river regulation bill and to such end to provide for the proper coordination of the several departments of government and for cooperation with the efforts of the States.

We can treat the subject under four general divisions; the water-power relation, the reclamation of overflow lands, the sanitary aspect, and the waterway or transportation problem.

In the economic investigation which I have referred to I undertook to value the arid lands and to reduce the area of this country to the equivalent of a humid region in the middle latitudes. We have 3,000,000 square miles of area in the United States, and if you were to compress it so as to bring it all up to one standard in soil resources or to carry population, you would reduce the area to about 2,200,000 square miles. In other words you would squeeze out about 800,000 square miles.

This 2,200,000 square miles of standardized territory is the equivalent of 11 countries like France or Germany, each of which has above 200,000 square miles of area. We have at present a population of close to 100,000,000, or less than 50 to the square mile, whereas France is carrying over 40,000,000, and the same density of population here would represent about 450,000,000 people, or four and one-half times what we have now. The density of population in Germany would represent a population here of over 700,000,000, or seven times what we now have. Probably in 40 years, certainly within 50 years, we will have doubled our population, and have 200,000,000 people. I think we ought to look ahead as far as we can and set our estate in order, and set our projects along comprehensive lines, so that what we now spend will contribute to a progressive development, so that we may have these resources developed as we shall need them in the future.

The territory between the Allegheny and Rocky Mountain systems represents about five-eighths of the potential resources of our country, and 70 per cent of this interior is drained directly by the Mississippi River system. Again, if you take the Greater Mississippi Valley from the gulf seaboard north to the barley and potato limit in Canada, the interior represents five-eighths of the resources of the continent north of Mexico and probably exceeds all Europe in producing capacity. The resources of Canada are more than 40 per cent of those of the United States.

Consider, first, the water power asset. To best control the flow of water, and from the standpoint of the water power itself, we begin at the very tips of the streams, the summits of the mountains, and at the divides. At these places you have the greatest rainfall, the greatest descent to the sea, and the greatest length of water course, and you thereby produce the largest results.

For instance, from the Rocky Mountain region every cubic foot of water will give you more than 400 horsepower and traverse 2,000 to 4,000 miles of water course; from the Alleghany Mountains will give you 150 to 250 horsepower and traverse nearly 2,000 miles of water course; from the divides south of the Canadian boundary you will get 60 to 120 horsepower and traverse 1,500 to 2,000 miles of water course. These figures make some allowance for the necessary fall in the streams. So that, from the storage standpoint and all the beneficial uses of the waters, the greatest result is produced by control at headwaters.

Much has been said about forestry, and the Government has made extensive reservations for the conservation of headwaters, the utilization of lands otherwise valueless, and the mitigation of soil erosion. This is all well as far as it goes, but we can do much more. We can store the surplus waters at their source, thus equalizing the flow and producing live streams throughout the year.

For instance, take a river like the Missouri, from its sources in the mountains we should double or treble its low-water flow and do the same with its principal tributaries. Take a minor basin like the Fox in Illinois and Wisconsin with an area of 2,700 miles. We can quadruple the flow of that stream. In every stream which I have examined or studied the low-water volume can be multiplied from two to five times. The aggregate effect of that is tremendous. As to how far such control can be carried can not be said without a comprehensive study of the subject.

The Geological Survey has estimated the water power potential in the ordinary flow of our streams at fifty to sixty million horsepower. They estimate, probably, that the complete control of our waters represents a potential of over 200,000,000 horsepower. Such studies as I have made convince me that—making due allowance for the necessary declivity of streams, uses for navigation, and other beneficial uses—it should be feasible to produce considerably more than 100,000,000 horsepower. Within the lifetime of men now living there may be a demand for 50,000,000 horsepower, and I shall use this figure in estimating the value of the water power which should be developed in the early future.

Let us make a comparison with the coal resources in the United States. All that is mined to-day would produce about 40,000,000 constant horsepower, taking the different varieties of coal as they run in the several coal fields and using types of engines that represent a better practice than now prevails. Much of the coal, however, is used for metallurgical purposes, for gas making and domestic purposes, so the amount available for power is much less. On the other hand, the best estimates available indicate that we are now using about 35,000,000 horsepower, of which about one-sixth is water power, but this represents installation rather than constant output. In the city of Chicago we are now using about 500,000 horsepower with a load factor of about 60 per cent, which means that the actual constant load is about 300,000 horsepower. This ratio is probably high, rather than low, for the United States as a whole, so that the actual average power in use probably does not exceed 20,000,000 horsepower.

Assuming a water-power development of 50,000,000 horsepower, what is it worth or what will it be worth when the population of the country is sufficient to absorb it?

You can afford in a region of cheap coal like the State of Illinois to invest about $200 per horsepower, but after such horsepower has worked out its relation and become a going concern, it will represent a capitalization of $400 to $500 per horsepower; in other words, it will evenuatly pay a dividend of 5 per cent on such a valuation. This represents the investment value to the capitalist, but its economic value to the State or Nation is manyfold.

When I was on the Erie Canal investigation in 1908, I made some notes respecting long-standing water powers and I found from $1,000 to $1,100 of investment in buildings and installations for the utilization of a horsepower. So, on that basis you have a fixed investment of more than $1,000 per horsepower. Go into water-power towns, which had no reason for being on earth 20 years ago, except as they were auxiliary to the horsepower, and you will find a population of from three to five people per horsepower that have been brought together, produced in a way by the water power. Taking the census value of population at $1,200 per capita, gives you an idea of what that water power is producing in wealth by enabling three to five people to live where they could not live before. In that sense, it is producing an asset of $3,600 to $6,000 per horsepower without considering the increment of value to land, higher market values prevailing in all the regions about.

You can not figure these economic propositions on the dividend basis. It is a common error, and we find it repeated often in Federal reports, to justifying improvements on the dividend or investment theory. If you stop to think about it, you will see that any enterprise railroad, water power, or any other public utility that earns a dividend, must produce wealth manyfold. It must produce something it can divide with the public or it has nothing to draw on. It can not take all. It can only take such fraction of it as will enable all parties to enjoy the fruits of the enterprise. Considered from this point of view, water-power development represents almost a fabulous amount.

The factory basis may not be the proper comparison for the future. In using such basis I have assumed that population is the real measure of potential wealth rather than convertible assets. The real wealth of a nation consists in its people, and the problem of statesmanship is how to develop the potential resources so that more people can lead better lives. Water power, as now developed and distributed, not only goes to the factory but into transportation; into the household for lighting and cooking, into farm work, and into a thousand minor purposes which were formerly served by main strength and awkwardness.

So I am going to assume for purposes of valuation that a horsepower represents an increment of two to three people, and that it has an equivalent value of $2,400 to $3,600 as an asset.

Now, 50,000,000 additional horsepower means the possibility of 100,000,000 to 150,000,000 more people being able to live in this country. It means not only the multiplication of your industrial pursuits but the absorption of your farm products and we have more soil resources than any other nation. It means an increment in a thousand directions; you can not put a limit to it.

But on the basis of $2,400 to $3,600 per horsepower you have a little estimate of from a hundred and twenty to a hundred and eighty billions of dollars as the partial value of the developed water power of this country.

I am not going into the question of by whom or how this water power should be developed. The proposition is that by source control of streams you not only produce the water power but you go a long ways toward solving all other problems relating to the utilization of our water resources. I am going to limit it here, however, to the storage proposition, which is valuable in itself, almost sufficiently valuable to justify its development, aside from the forestry end of it, which we are coming to recognize as valuable also, aside from its relation to stream flow.

I will illustrate what I mean in relation to storage. We have 70,000 to 80,000 acres of water in the Illinois valley in the river and its back waters. We have produced for several years a crop of from $700,000 to $800,000 worth of fish. That is an average of $10 per acre, which will compare favorably with the production of farm lands in many parts of the United States. In China, where fish culture is a very ancient art, the actual yield exceeds $50 in gold per acre. The annual product of the Illinois River, which is the best fishing stream in the United States, represents 50 cents per linear foot of river. The storage reservoir is not only an asset in this way but it continues along the streams of equalized flow from the reservoirs to the sea.

Another aspect of the question concerns the saving of our fuel supplies, and this relates not only to the production of power and its uses but also to electrochemistry and metallurgy, which is still in its infancy. You may thus save by far the larger part of the coal now mined and substitute the less costly agency, one that is almost automatic and is perennial with the seasons and with the years. It is true that the first cost is greater, an investment of $200 is justified, increasing to $400 or $500 where coal is relatively dear, but the cost of operation is nominal, only $2.50 to $5 per year after the power becomes a working concern. You can contrast this with the annual cost of maintaining a horsepower by steam, the mining of the coal, its transportation and the handling of the same, and the operation of the steam plant. It is a mere matter of capital, but we produce an enormous annual saving and simplification of the whole economic situation.

Again, some 40 per cent of the tonnage of our railway system consists of fuel; and to the extent that water power may be substituted for fuel and for power in the metallurgical and chemical arts, the railways can be relieved of these burdensome freights in favor of high-class freights, not only to the betterment of revenues but to the delay of great additional investments in duplicate mileage.

Generally, when you come to consider the development of a dormant resource, it is impossible to trace out the benefits in all the ramifications and what it may mean as an asset. We can only touch upon some of the more significant relations, and these at best are merely indicative rather than determinative.

RECLAMATION.

Let us pass now to the subject of reclamation. It is largely a question of time, as it will take many years to bring about a condition of control such as I have discussed in relation to the development of water-power values. You will put many streams under control from their sources early in the development and, by the time you have completed from 50 to 60 per cent of your task, you will bring the lateral streams and trunk tributaries inside their banks and multiply the low-water flow—say, three times. In the Mississippi River at Cairo, you would raise the low-water flow from 100,000 feet per second to 250,000 to 300,000 feet per second. You would produce live streams from the reservoir sources and augment the flow of the water to the sea.

By thus multiplying the low-water flow of the streams you would greatly extend the benefits of navigation, produce automatically without other work a great improvement in the navigable capacity of the streams themselves, while solving at the same time the one great factor in the problem of reclamation—control within limits of the flood supply.

We have below Cairo, and subject to overflow, about 30,000 square miles of territory, usually estimated at 20,000,000 acres, and we have in addition in the rivers and tributaries, marginal land and bottom lands, sometimes several miles wide, that will aggregate 50 per cent more or 30,000,000 acres, making a total of 50,000,000 acres of alluvium in the Mississippi River System.

What is the value of these alluvial lands as a national asset? I have a friend who developed a district in the Illinois Valley, about 7,000 acres. He invested about $50 per acre in land, levees, and pumping works and owns 5,000 acres which he will not sell for $1,000,000. The investment was about one-fourth of the reclaimed value. That illustrates the direct increment from the merely financial standpoint, but it is not a proper measure of the economic value. The real value of such an asset, considered as wealth, is represented by the number of additional people who can live, and this may be taken at the census value of $1,200 per capita. Take, for instance, the Nile, which everybody knows about. That is a stream that in its low water flow and flood characteristics, area of basin, and other features, does not differ greatly from the Missouri River at Sioux City. On the bottom lands below the last cataract, it carried at one time 10,000,000 people, as nearly as we can now estimate, and it had under cultivation about 5,000,000 acres. Gentlemen, there are more bottom lands along the Missouri River from St. Louis to Fort Benton than were ever cultivated in the best days of Egypt. Below Cairo you have four times as much land as was ever cultivated in Egypt.

Egypt is cultivating about 3,000,000 acres and the Government is trying to extend the area again to the ancient limit of the palmy days of the Pharaohs. The State of Illinois alone has 3,000,000 acres of overflow lands, partly reclaimed, as much as is cultivated in Egypt to-day, more land than there is in the whole State of Connecticut, mountains, and creeks and everything else included.

Again, take the Mesopotamian plain, where history began with the Chaldeans. The whole area of the Tigris and the Euphrates River basin is but little in excess of that of the upper Mississippi above St. Louis and is semiarid in part and its average run-off is probably less. The Mesopotamian plain sustained by irrigation a population that probably did not differ greatly from that of Egypt.

These ancient alluvial areas have been used as arguments and precedents in considering the subject of reclamation. I believe that history says that Cyrus turned the course of the Euphrates and marched his army into Babylon through the dry bed of the river. Imagine somebody storming the city of Memphis or the city of New Orleans from the dry bed of the Mississippi.

The problems are not alike. They were thousands of years in solving their problems, and we are trying to do it in 15 minutes. If we can not do it in five years, we do not think it is worth while. Sir William Willcocks visited this country in 1914 and had much to say about Egyptian and Mesopotamian practice upon which I commented at the time, but the matter was not put in type. The ancient practice dealt with the flood waters after they had reached the alluvial plains, by means of dikes, canals, and reservoirs, a practice that was entirely consistent with the application of the surplus waters to beneficial use in arid regions. Our alluvium for the most part lies in humid regions, where the problem is one of beneficial exclusion and the reverse of soil saturation for a later crop. Nevertheless, the ancient methods are suggestive respecting local control in the lower compartments of our streams pending the time of complete source control, and along this line we have such projects as that of the Roumanian Government for the reclamation of the alluvial plains on the lower Danube and the St. Francis reservoir project of 1900 by Seddon.

Egypt carried on her alluvial lands two people to the acre, and this estimate may apply also to the Mesopotamian plain. What was the value of this land to Egypt as a national asset? On our basis of wealth it would represent $2,400 per acre, but what is land worth to a nation that has little or none? It simply means that national existence can not be maintained. A country which has a surplus of land attaches no particular value to it. It is like other things that exist in abundance, as atmosphere. If we did not have much of it, it would be worth $100 an ounce. On the basis of Egypt, the alluvium of the Mississippi River system would carry 100,000,000 people apart from the uplands. The Yangtse alluvium in South China is in a humid region with excellent rainfall distribution and carries from 3½ to 4 people to the acre, and on this basis the Mississippi Valley alluvium has a potential population of nearly 200,000,000.

There is no limit to the value of land as a national asset when demanded by the growth of population. All history shows that it determines the locations of nations and defines their extent, their wealth, and their power. The need of it has made the struggles of race and for empire and brought all Europe to its present crisis. It has made migrations to our own soil, turned covetous eyes our way, and challenges our supremacy in the Americas.

In our career of development we have exploited our resources as an unlimited asset and have made only a beginning in the development of our overflow lands. Their need has not been felt with our great domain of fertile uplands which are better suited to individual enterprise; but following the development of irrigation projects in the semiarid regions, these lowlands will attract attention and enlist the public enterprise. Their reclamation is a part of the great problem of the development of our water estate and they should be treated in their proper relation to source control. There are other aspects of reclamation and many qualifications respecting source control, but I will not deal with them in this connection and at this time.

SANITATION.

The third division of the problem relates to the salubrity of the valleys, their sanitation, and healthfulness. Malaria has been one of the great handicaps of the world. It has forced population and human development to the middle latitudes and in our own country has arrested the development of regions and of States for decades and generations. Some spaces of the world, otherwise inviting, are practically denied inhabitation.

It is only within the present generation, almost within the present decade, that we have begun to learn the nature of subtropical and tropical diseases and how to deal with them. We now recognize their biologic nature as due to various types of bacilli and parasites. These specific maladies are preventable and, from a rational viewpoint, are to be regarded as accidents rather than as necessities. With the development of this knowledge we are going to be able to utilize for our race the subtropics and the Tropics themselves and multiply manyfold the possibility of population in this old earth.

If the recent advance in medical science promises so much, why should we spend such enormous sums for reclamation from the merely sanitary aspect? The answer is that while enormous strides have been made in remedial treatment, the advance along preventive lines has been much greater and is more far-reaching. If we are to get rid of the malaria-bearing mosquito and the other carriers of specific germs which have debilitated mankind in the regions infested, we must reclaim the overflow lands, the swamps, the jungles, and the saturated grounds—clean up the breeding places and the insect incubators.

This is not all. Prevention and remedies which medical science offers are not alone sufficient. You must do something more than deal with the effects, until the causes which made these lands the nursery of human blights are, themselves, changed. You still have miasmas and other predisposing conditions which enervate even in the absence of specific maladies, and you must go further and drain and desiccate the overflow lands and prepare them for virile inhabitation. All this spells reclamation and more. It means such occupation and development as made the alluvium of Egypt, Mesopotamia, and China the homes of millions of healthy lives.

Aside from the economic value on the affirmative side of reclamation, the negative or human side can not be represented by the dollar mark. The salubrity of the valleys due to reclamation, the better conditions of life, perhaps, represent more in a negative way than the merely material increment of wealth. It is a problem of healthy existence as well as wealth.

WATERWAYS.

The fourth or last division is the waterway or transportation asset. It will occur to you without further explanation that by the storage of waters at their source and the equalization of flow, we have not only solved the power problem but have added an asset in the way of fisheries and forests. We have solved the greatest factor in the problem of reclamation; we have, as a result and as a by-product, produced a great waterway system from storage reservoir to the sea that only needs to be improved and connected up at vantage points in order to constitute a complete system for the whole country and discharge its proper function in transportation.

We have been in the habit of thinking of our waterway system, or rather not thinking of it, much as do the fish. They navigated it, if there was water there and, if there was not, they did not navigate it. They had no way of regulating the flow.

Up to this time we have made no effort to do more than scratch the sides of our rivers, tickling them, as it were, on the theory that nature had been guilty of a mistake that we ought to correct. We have built some canals around the obstructions and improved some rapids much as we would construct fishways to extend the range of movement. Like the voyageurs, we have followed the trail of the waters wherever they led, glad of such convenience, until a better transportation agency appeared. Perhaps we could not do better with the resources of finance and engineering available up to a comparatively recent time.

Within my short life, practically within the last 30 years, first-class masonry for all hydraulic purposes has been reduced to one-third or one-fourth its former price. For cut-stone masonry that formerly cost from $18 to $24 per yard you can substitute concrete at $4 to $6 and with that comes enormous increase in possibilities. The same is true respecting excavation beneath the water, which has been cut in the same ratio by the hydraulic process from the old price of 30 to 50 cents. The resources of the art are everywhere multiplied. And still further betterments are due. We can do something more than tickle the sides of nature in these streams. We can reconstruct them to our liking, make over the smaller tributaries in conformity to a waterway system, and I think the time will come when we will be justified in reconstructing such streams as the Arkansas or the Missouri Rivers.

Let me illustrate by the Illinois River. The alluvial division is 230 miles long, and our engineering resources to-day are adequate to a 20-foot waterway, and a reconstruction of the stream so it would not be recognized by the oldest inhabitant, at a cost of between $50,000 and $60,000 a mile. You would not only produce an ideal waterway, but make a better channel for floods and reduce levee heights. Take the Missouri River, with which I am more or less familiar as far up as Fort Benton, 2,400 miles. It runs on a declivity of 10 inches per mile after it leaves the foot hills. It has so much vitality that it expends a part of its energy in trying to wreck its bed everytime it has a flood. It has too much power. In place of a broad and shifting stream bed on an average slope of 10 inches per mile, it should have a declivity of 2 to 3 inches to the mile and a deep, contented, and placid channel.

There are long reaches in the Missouri River running in a perfect channel on a slope of 3 inches per mile. I have seen other reaches where it ran all over creation and the adjoining settlements on a slope of 2½ feet to the mile.

Were the resources of our art sufficient, could we carry out an ideal project, we would reconstruct the river bed absolutely by a series of pools and take out of it from two-thirds to three-fourths of its slope, and convert it into power and have a deep and placid stream for navigation all the way to Fort Benton. The river so reconstructed in conjunction with storage would furnish 6,000,000 to 8,000,000 horsepower; in other words, the Mississippi River has several million horsepower in excess of what is required for a deep and stable channel.

There is no limit to these possibilities with the development of the engineering art and the growth of our financial resources. But some people think waterways are obsolete and that railroads are doing all the work of transportation. I remember 30 years ago I was editor of an engineering paper, and we had several eminent steam engineers who were writing essays, and I was undertaking to publish some of them. They were proving that waterpower was obsolete, and would soon disappear entirely in favor of steam power; but to-day it looks as if steam power will become secondary or archaic and that waterpower will eventually dominate the situation. That has come about through electric generators, alternating current, high voltages, and long-distance transmission.

Some people are reasoning in the same way respecting waterway transportation. I think the time will come within the lifetime of many of us when the waterway will be recognized as really the dominating transportation factor in this country, rather than the railway. I can illustrate that, perhaps, by the history of France and Germany, and both of these countries are making a tremendous lot of history just at the present time. They are really the dominaitng powers in this struggle, and the reason for that is the perfection of their transportation agencies.

France and Germany are about equal in respect to transportation facilties. Each has developed on the basis of about four miles of waterways to each 100 square miles of territory and on the basis of from 15 to 19 miles of railway to each 100 square miles of territory. With that development they are able to do their transportation work with an average density of population of from four to seven times what we have in the United States.

What are the conditions here? In the northern territory from the Mississippi River to the Atlantic seaboard, we have from 25 to 30 miles of railroad to each 100 square miles of area, and they have proved unequal to the business at times. Take the State of Iowa, with a relatively meager population density. It is carrying about as many miles of railroad per 100 miles of territory as either France or Germany.

The lesson is this: I will not take your time to go into detail as to how it struck me when I was abroad. I will simply indicate this proposition. The railroad is adapted to the express, passenger, and quick dispatch work, to business that will bear high charges. But suppose that we are to do all our transportation work for the future through new railroad development. Take as a basis this 2,200,000 square miles of equivalent territory. Assume, if you please, that one-third of our mileage is overtaxed, that another third is worked to two-thirds of its capacity, and that the last third is worked to one-third of its capacity. When the population has reached four to five hundred million, you will treble your mileage or require 750,000 miles of railroad in place of 250,000 miles. On the other hand, suppose you had proceeded on the theory of France and Germany in developing a combined system of railways and waterways. Then you would not have needed more than half the railroad mileage, 350,000 to 400,000 miles properly distributed, together with 80,000 90,000 miles of waterways.

We can not undertake to estimate in advance what would be the relative cost of the two propositions; that is, the combination of waterways and railways, and railways alone. We may assume on our present basis that the railway development alone would cost $60,000,000,000 or more. We might assume, further, that the combination of waterways and railways would cost $40,000,000,000. The saving would be $20,000,000,000. This may not be correct, but is illustrative of the great difference in the two propositions.

In Germany and France the railway development has been made practically under the control of the State. When Germany had developed her railway system adequately for territorial purposes and for military, passenger, quick dispatch and high-class service, she sought to avoid the enormous cost of increasing her terminal facilities and duplicating her lines and the further appropriation of lands which were otherwise needed by resuming the more comprehensive development of her waterways. She operated her railway system as a part of her fiscal policy, without discrimination between localities and water points, and practically determined the location of new industrial developments by the waterside where they could obtain cheaper transportation under their own control, and incidentally reclaimed along the watercourses much useful land. The result has been a remarkable growth in waterside cities, and a tremendous increase, particularly in the coarser industries, and a great development of water-borne commerce.

Our foreign competitors have not only this internal waterway system, combined with railway development, but are bordered on one or more sides by the sea, while our waterway supplement is undeveloped and several equivalent areas, rich in soil resources, are in the central interior and remote from the sea. These remote regions in their relation to other units and to the seaboard will require from two to three times the normal railway development and will thus be handicapped in comparison with other areas adjacent to the sea and in competition with more favored nations. The remedy is not only the development of an internal waterway system, but one of the greatest possible capacity, with such trunk developments as will, in effect, extend the sea to the remote interior.

Again, railway development alone will deny the development of billions of dollars of coarser resources which are unable to stand railway charges over long distances. I will illustrate. In the past 30 years I have made a number of comparisons from the commodity lists of our railway returns. In these earlier comparisons I found that some 52 per cent of the commodities moved by rail cost more for transportation than for original production, and in recent years the proportion has increased to about 70 per cent. The handicap to our coarser resources and the blight of many is thus made manifest.

I do not know that it is necessary to go further into the waterway asset. You have been talked to without limit and talked to death at various times in regard to the utility of waterways and waterway development.

GENERAL.

The general point I wish to make, in connection with the whole subject matter, is that these several elements of the problems are related. There seems to be a feeling among the people, perhaps, that you can not afford to develop any one of these assets by itself, because it will not pay. When, however, you can develop four related propositions with one expenditure, it should not be against that expenditure that it will accomplish so many purposes. If you can produce by one treatment these assets of water power, fisheries, forests, and pleasure resorts, this reclamation of the valleys, this betterment of climatic and sanitary conditions, and this transportation system, then there is no limit to the expenditure that will be justified. We are liable to make the mistake of attempting to do one thing at the expense of another, and blight some of these assets in the effort to cut out for development those which now seem to be most important.

For instance, there may be a disposition to go ahead and grant water-power privileges. I am not going to discuss the question of whether such work should be done by private parties or performed by the United States, but certainly we should have a comprehensive plan. When a project is undertaken, either by a private corporation, by a State, or by the United States, it ought to represent a part in a scheme of general development that looks ultimately to the conservation of our water resources as a whole.

The question of cost need not be considered. It is merely a question of justifying, from time to time, the individual steps in a comprehensive scheme of progressive development. No man can estimate beyond the immediate future the development of a fundamental resource. You must start in and proceed as conditions justify.

You might just as well sit down with your son and figure out all the hogsheads of soup, all the droves of cattle, sheep, and swine, and flocks of poultry, and all the carloads of cereals, and all the tanks of liquors and crates of tobacco, and other things, that he is to consume during his natural lifetime. That son might go off and commit suicide on the theory that he never could earn enough to meet the liability, or he might ask his dad for an appropriation to cover the entire bill, and dad would say, "My capital is insufficient," and so there would seem to be no solution to the problem. But, nevertheless, the son will proceed as usual to get married, rear a family, care for his maiden sister and his mother in her declining years, and keep 15 minutes ahead of the sheriff all the time, without thinking anything about it. These great propositions for comprehensive development must be viewed in much the same way.

Gentlemen, I have presented the general round-up of the broad proposition as I see it. As I understand the purpose of the Senator's bill in a general way, it is to bring about the cooperation of departmental agencies in order to develop our water resources in their proper relation; and, further, bring about a coordination in the efforts of the States.

I was deeply impressed at the White House conference of 1908 with the idea that our governors should be regularly convened for the purpose of establishing proper relations between these semi-independent sovereignties and the Central Government, and between the sovereignties themselves, so that the great physical problems which exceed State limits can be better and more expeditiously worked out. There seems to be power, under the Constitution, for two or more States to cooperate in the solution of projects of mutual advantage, with the consent of Congress, but I do not know that it has been worked out.

I think the governors of our States should be a kind of privy council to the President of the United States for the purpose of considering, coordinating, and solving great physical problems. Not only should the several departments of the Government be brought into proper relation, but also the several States in their respective spheres.

There may be a difference of opinion as to how far Congress, under the Constitution, can handle all the elements of the problem, and there may be a difference of opinion as to whether the United States in itself can provide all the funds required to carry out a great and progressive project of this character; on the other hand, the thing grows with what produces it, and with increasing resources the ability to apply them also increases.

I think we all have come pretty much to the conclusion that under our system of government, and with the great demands made upon our Government by the people, both in the National, State, and local affairs, that everybody is going to be taxed up to the limit and everybody is going to have left, out of his earnings and resources, just enough for a decent livelihood. Under such circumstances it is simply a question of how the great machinery of government will apply this money. If we can devote part of it to creating new assets and new resources, in place of spending it all in what we might call "governmental friction," we will be making a distinct gain.

Senator Newlands. Mr. Cooley, as I understand it, the general problem is to seize the water as soon as you can after it falls from the heavens on this great watershed, and to obstruct the flow down to the Gulf, and by various works to put that water to beneficial use, and to control that water in such a way that you can reclaim large overflowed areas?

Mr. Cooley. That is the general theory.

Senator Newlands. The thing is one of mechanical obstruction all the way along down the river, and the tendency of that would be to equalize the flow of the river, and raise the flow in a period of drought and to diminish it in the period of flood?

Mr. Cooley. That is the idea exactly.

Senator Newlands. I just wanted to ask Mr. Cooley one more question. You think leading out these flood waters over the arid land has a tendency, of course, to diminish these floods?

Mr. COOLEY. I think so. Anything in the way of storage, even though it is not operated for that particular purpose, like a natural lake, diminishes floods. You have swamps, for instance, in the upper Mississippi, and lake expanses there, and the result is a better control of stream flow, and from a given area in the upper Mississippi the flood volume that will come to the stream is only about half what it is in the Ohio, where you have few conditions of control.

In the Great Lakes you have the best example of natural control where the high water is only 30 or 40 per cent above the average, and where by a little storage control you can equalize the flow. We have in the Tennessee Basin about 30 per cent of the average volume represented by the minimum flow and the same is true for the upper Mississippi. In the Ohio, above Paducah, however, the low-water flow is only about 10 per cent of the average.

And again, the Illinois Basin and some other tributaries have a low-water volume of 7 per cent or less of the average flow. In the case of the Illinois this is due to an impermeable subsoil and to the richness and depth of the surface soils by which all the water is utilized in the growing season.

It will thus be seen that river basins differ greatly respecting the control of run-off and a study of their characteristics is very suggestive.

In 1886–1888 I made a study of the relation of rail and water transportation and followed the inquiry by further investigations in later years. I reached the conclusion that, with unrestricted competition, the minimum cargo unit should equal or exceed the railroad train unit and that movement should be possible over long distances and from points of origin to destination without breaking bulk. I predicted the canals of our fathers would become obsolete and that our river commerce, as then conducted, would fade away, and both these things seem to have occurred. The same thought has since been expressed in a different way by Mr. James J. Hill, who was a steamboat man before he became a railroad magnate. By reason of these conclusions, I became a deep-waterway advocate and urged the development of a related waterway system, a system that would, in some large degree, develop the potential of the most remarkable lay-out and connecting possibilities possessed by any continent, rather than a system based on some one's conception of waterway equipment. I felt, as the evolution of water craft has shown, that if we produced new waterway conditions the class of water craft would develop which would best utilize it.

Recently commendatory movements have taken place for the development of local water terminals, and this is well as far as it goes. Such development in its logical relation is most characteristic of the commerce of the Rhine from Strassburg to Rotterdam.

Recognizing the effect of unrestricted railway competition the Congress has passed regulative measures intending to produce such a condition as I have related with respect to Germany. It goes without saying that equity between localities, particularly in a territory so great as ours, will eventually do away with locality discrimination, and this, could it have happened a generation ago, would have given our waterways a better chance; but I question the ultimate utility of any regulation that is not based entirely on economic principles.

We have done little to increase the capacity of our waterway system as a whole, and so there is little to undo in our broader conceptions. I have not thought it worth while to advocate waterway development merely as a railway regulator or competitor and for the purpose of dividing traffic, but have looked upon such development as necessary to the proper conservation of our resources and to the handling of our coarser commodities, leaving to the railroads the more profitable classes of transportation. Up to some 15 years ago the average return per ton mile had been steadily lowering, but it has not lowered in recent years, although there has been a great increase in low-class tonnage, all of which means that there has been an actual raising of rates through reclassification of high-grade freight, and recently a recognized increase in rates by the Interstate Commerce Commission. The old argument that railways do the work and that the cost of transportation by rail would diminish has not been borne out. The railroad is not unlike some other public utilities in that an increase of its work, beyond a certain economic point, would mean an increase in capital and operation out of proportion to the increase in capacity so we must dismiss the idea that the railway system can meet, in any substantial degree, all the needs of our development after we have skimmed off the cream.

One of the results of the improvement in land transportation has been to accentuate the growth of waterside cities, quite contrary to preconceived ideas; in fact, the proportion of urban population in the interior is less than under affirmative conditions of land transportation. In the United States about 80 per cent of the population gathered in cities is adjacent to waterways that have been or are habitually navigated, and if we include watercourses that have been recognized by the appropriation bill, we will cover more than 90 per cent of the population gathered in cities. This in itself is eloquent testimony to the influence of navigable waters and a full assurance that, by proceeding along natural lines in the development of a waterway system, we will serve substantially the great commercial interests of the Nation.

Since the opening of the Panama Canal goods have gone from Chicago to the Atlantic seaboard and also coarse freight from one of the great industries of Illinois for shipment by water to Pacific coast points as against 2,000 miles of overland haul by rail. Such instances are numerous and no better argument need be made as to the influence of sea routes, and the same argument applies—with only less force—respecting competent inland water routes. Statesmanship should avoid any unnecessary concentration of commerce, industry, and wealth at our sea margin at the expense of the interior, not only from economic considerations but also as a matter of military precaution. Our rail resources are in the Mississippi Valley, and with its proper development from every standpoint we can maintain our solidarity as a nation against all the forces that can be brought against it.

Primitive man determined a fixed abode and developed the art of agriculture through the feeding of the waters to the thirsty soil, and human institutions were thus evolved. Civilization developed and organized the cooperative state for the better control and application of the common inheritance in waters. The exhaustion of the water inheritance forced migrations and conquests and, in time, followed the subduing of the humid wilderness, the abode of those who lived by the chase and as nomads. Through the early millenniums of history, water measured the extent and wealth of nations, and no limit could be set to its value or to the value of the lands to which it was appurtenant.

In my investigation of the semiarid regions of the United States, I have assumed as humid those lands which would mature three crops in five years and as semiarid lands which would yield only two crops or less in five years, thus requiring the application of water to justify tillage. On such basis, the semiarid line crosses the United States substantially between meridians 99 and 100, or divides our country into practically equal parts. The western half has some 200,000 square miles of humid territory near the Pacific coast, thus leaving 1,300,000 square miles of semiarid territory. The aridity diminishes toward the north and disappears in Canada with some 200,000 square miles additional north of the boundary.

Of these semiarid regions, some 700,000 square miles lie to the west of the Rocky Mountains and some 600,000 square miles to the east, the Mississippi River drainage taking about 500,000 square miles, or some 40 per cent of its basin area.

The upper Missouri River basin and the headwaters of its two tributaries, the Platte and the Kaw, lie west of the semiarid line, and also the upper basins of the Arkansas and Red. The Rio Grande basin and the Colorado basin are entirely in the arid regions, while the Columbia River basin is, in part, semiarid. Again, there is a great central basin without outlet to the sea.

I have estimated the economic equivalent of the semiarid regions from the best data available. The water resources have been taken at various values for irrigation, ranging between 75,000 and 125,000 square miles, the larger estimate representing an ideal use of the waters, while the lower estimate is that of the Geological Survey, usually stated in the reclamation program as 50,000,000 acres. Outside of the irrigation limits the lands are estimated at their pasturage value. Some 110,000 square miles in the western division do not produce sufficient herbage to carry a steer to the square mile, and this is the remnant of "the Great American Desert," depicted on Mitchell's early maps. Forests and woodlands are estimated in comparison with the normal stand of timber in humid regions. The aggregate is 490,000 square miles of equivalent humid territory, or about three-eighths of the semiarid area. Of these values 275,000 square miles lie east of the mountains and represent about 46 per cent of the area, while 215,000 lie west of the mountains and represent about 31 per cent of the area. In both divisions the ratio of value increases northward.

It is some years since I made these studies, and meantime the reclamation policy has been established and is in process of development. The subject matter has presented some new phases. Dry-culture methods with crops in alternate years promise well in favorable localities. New herbage plants have been introduced from foreign regions, and date palms and other trees promise well under special conditions. It is probably true that irrigation over extensive areas sets up local climatic cycles with a partial reuse of the waters evaporated and transpired by plants; otherwise we can not explain the desiccation and desertlike character of many localities, well populated in ancient times and where no general change in climatic conditions has occurred. On the other hand, forest values are probably too high, and perhaps the pasturage values, so a revision of figures might not change the results which, at best, are only illustrative.

On account of the selection of the best tracts of land and the intensive culture in irrigation and the relation to mineral resources, the value is much greater than in humid regions, and this is well borne out by the history of arid-land nations, so we are justified in assuming a greater economic importance for these reclaimed lands than is indicated by the mere comparison with humid areas.

Irrigation, if carried to the limit, will consume all the surplus waters of the semiarid region except in the regions to the north, as represented by the basins of the Columbia and upper Missouri, and this is probably the highest use to which such waters can be put. There will be sufficient of a remnant left, however, to produce slack-water navigation in such streams as will be justified. The storage required for the surplus waters is much less than ordinarily assumed by reason of the fact that two-thirds or more of the rainfall and a still higher ratio of run-off occurs in the growing season. So large a proportion can be stored in the high altitudes that a considerable development of water power can be made between the place of storage and the place of application to the soil, and such development will probably be adequate to the needs of the semiarid region.

Senator Newlands. Mr. Cooley, you have not covered the question of the irrigation of the arid lands yet.

Mr. Cooley. I perhaps inadvertently am guilty of a discourtesy in not saying to the committee that I will be pleased to give any information I am possessed of in regard to any subject whatever.

The Chairman (Mr. Humphreys). The question of flood control is the prime question with this committee just at present, and we would like to hear from Mr. Cooley along that line.

Mr. Cooley. I have stated the proposition that with 50 or 60 per cent of the basin under control at Cairo, you would probably multiply the low-water volume by three times and bring the high water down to bank level; or, in other words, reduce the high water from 1,800,000 second-feet at Cairo, say, down to 1,200,000 or 1,300,000 second-feet, assuming these figures to be representative, and raise the low-water volume from 100,000 to nearly 300,000 second-feet.

The effect of such an equalization of flow would be revolutionary, but such results require constitutional treatment and involve a considerable element of time. Meantime, the "patient" is suffering and must have palliatives of some kind, and perhaps hypodermic injections to keep him quiet. Some psychological force or real force must be applied to encourage and relieve the patient until the constitutional remedies can have their effect. Anything you do, however, has an effect from the beginning.

I am not here for the purpose of criticizing any levee program. The most ardent levee man will favor any proposition which will avoid the necessity of building levees, or will lessen their height. I have expressed myself at some length, on former hearings, in relation to the proper treatment of the Mississippi to the effect that levees should not be built between Cairo and the Red River without at the same time holding the banks. You have here an alluvial stream, much like the Missouri, in which the stream bed is a phenomenon of the flow of water and the flow of water again is constrained by the stream bed. At some stage of water, which we may take as the "bankfull" stage, the physical relations are in a balance, as it were; that is, the stage produced by overflow conditions which has prevailed in nature from time immemorial, and which created the river bed. When the water is below the critical stage, the flow to a degree is controlled or dominated by the river bed, and when the water is above the critical stage the forces of the stream dominate the channel, and tend to work it over and change it to meet new conditions.

Again, in the condition of nature, the flood volume at Cairo was greatly reduced at New Orleans, a volume of 1,800,000 second-feet shrinking to 1,200,000 second-feet, or to about two-thirds, under normal conditions. This was due to the reservoir action of the river bed and the wide-spread overflow, and illustrates forcibly the effect of natural reservoirs in impeding the flow, lengthening the flood crest, and reducing its maximum. The river bed itself below Cairo is equivalent to a reservoir of 600 square miles, 40 feet deep. This was multiplied manyfold by thousands of square miles of overflow area. Notwithstanding the addition of 40 per cent in basin area below Cairo, represented by the drainage of the Red, the Arkansas, the White, and the St. Francis Rivers, and the eastern tributaries, the flood volume in the lower river never reached the maximum at Cairo. Could the overflow areas have been operated as restraining or storage reservoirs, rather than impeding reservoirs, the effect would have been far more significant.

This natural control, together with the overflow regulation through bayous to the Gulf, determined practically a fixed maximum volume below Red River and the forces of the stream molded in its own deposits a stable channel, on a gentle declivity, a channel as narrow and deep as the nature of the material would permit. Between Cairo and Red River, the declivity is several times greater and the more variable forces of the stream have worked out a broader and shoaler stream bed in some proportion to the increase in dynamic energy. Nature struggled for channel stability but was defeated in localities by concentration of surplus declivity, by cut-offs, and by unseasonable return of water from impeding reservoirs and local tributaries. We had then in nature between Cairo and Red River a stream more or less unstable with the flow erratically controlled by impeding reservoirs and tributaries, continuing from Red River to the Gulf with a fixed regimen and as a species of nozzle.

You are going to build levees, you have been building them and this is the proposition you are up against. You wipe out all the natural overflow regulation and constrain the entire volume to the river channel and take it as it comes. The maximum volume is greatly increased, the flood height is raised, and the velocity is accelerated. You have greatly increased the dynamic energy of the stream. You have not only magnified the surplus horsepower but you have increased the speed of application, thus multiplying the destructive powers; in other words, you have stimulated the energy, filed the teeth, and ground the claws of your tiger.

In the early sixties we had the voluminous report of Humphreys and Abbott which minimized the controlling power of overflow and justified levee treatment. When I was on the rivers in the early eighties, it was assured that the surplus dynamic energy would expend itself in deepening the stream bed. The wish seems to have been father to the thought, which has not been justified by experience. Unhappily, the river does not seem to have exercised any wise selective power; in fact, it seems to have discriminated in favor of the banks. This appears rational when you consider that the increased dynamic energy must have increased resistance which can only be produced by widening the stream bed, or even dissipating it entirely as is the case on the high declivities of the Platte River. If you will couple your levee building with bank correction and bank holding, the forces of the stream nust expend themselves in deepening the stream, so you might realize the dream of Capt. James B. Eads who diagnosed the conditions in the early eighties, and, by the scientific use of his imagination, set Cairo on a hill. His idea was that the surplus energy would be disposed of by lowering the river bed and lessening the declivity until the river flowed within its banks and levees became unnecessary. That would be the tendency. How long it would take we do not know, but the tendency is in the right direction.

Suppose you reclaim all the overflow lands above Cairo, which represent a greater area than those below. In the progress of inhabitation you will drain all the upland swamps and hasten the flow of water to the streams and bring with them increasing loads of detritus. Add these further conditions to those which you are now trying to meet, and what is going to happen? You have already increased your former flood flow through your nozzle below Red River by over 20 per cent. You can not keep this up indefinitely and add to it without wrecking your nozzle or bursting your hose, and this has practically occurred in every great flood by the giving way of levees opposite the reservoir areas above Red River. If you keep it up indefinitely above Red River and add to it without securing the banks, you will eventually dissipate your river bed. How long it will take to bring about these results I do not know, but the longer it does take the longer it will require to correct the conditions after they have developed. The sensible thing is to restrict the supply of water at the hydrant; in other words, to control it at its source. So whatever you do as a matter of present expediency—which I am not criticizing—couple it with some constitutional remedy that will change the conditions as quickly as possible, and ultimately work out a solution which is constructive and evolutionary rather than merely restrictive and of a police character.

Much has been said of the inefficiency of reservoirs at headwaters in controlling the floods of the lower Mississippi, particularly such floods as originate in the lower compartments of the valleys, and for such purpose it may be granted that reservoirs in the vicinity of Cairo would be most immediately effective. The individual reservoir will contribute some flood benefit throughout the course of its waters to the sea, but the extent of its influence naturally diminishes down stream. In great basins, however, like that of the Mississippi excessive run-offs are localized or do not occur over the entire basin in any one year, and so the reservoir control must be more extensive. In order to control all floods in the lower Mississippi it is presumed also that source control refers to tributaries that may be far down in the system as well as at extreme headwater, and much will depend upon the distribution of the reservoir system prior to its ultimate completion. The point is to control the flow of all the water possible for all the uses to which it may be put, and, in developing the value of our water assets, I have treated the flood problem as in some degree incidental. I realize that the pressing of particular elements of the problem for immediate solution, and matters of expediency, may interfere with the most systematic treatment of the water problem and defer our arrival at the goal, and every recourse must and should be availed of in meeting immediate conditions. The point which I am trying to make is that we should not rely upon Dr. Quack's or any other panacea, but attain our object, so far as practicable, in conformity with the general plan which will eventually change the conditions and make them as permanent as though they had always been.

I have been asked to raise the question of diverting direct to the Gulf the western tributaries of the Mississippi below Cairo. In my early studies I concluded that the Red River once discharged directly to the Gulf by way of the Atchafalaya, and that it was merged with the Mississippi through bend erosion, and I suggested to my chief the advisability of restoring the ancient condition, or divorcing the Red River from the Mississippi entirely. From the merely physical standpoint it is possible to divert the Arkansas River by way of Bayou Bartholomew and through the Tensas and possibly to add thereto the White River. I have not considered the matter from the engineering standpoint and do not undertake to say that it is practicable, or even feasible. I am satisfied, however, that the western tributaries below Cairo contribute more trouble than gain; that they impose more conditions on the river bed than are met by the additional low-water supply; and that the Mississippi River below Cairo, would be a better stream without them. I wish to be very cautious respecting this suggestion and feature it tentatively as a matter for examination.

The CHAIRMAN (Mr. Humphreys). The statement has been made to us by an engineer that it would probably cost in the neighborhood of $2,000,000,000 to do that. Have you ever made an estimate on it?

Mr. COOLEY. No; I have not. I had the Arkansas River under study at one time and, as I recall, its flood volume would require a channel representing several million yards of excavation per mile.

The CHAIRMAN. The channel probably, as I understand it, would have to be large enough to carry a million second-feet.

Mr. COOLEY. It depends on what you are going to take in. If you limit the diversion to the Arkansas, it would be much less.

The CHAIRMAN. I mean all the streams.

Mr. COOLEY. If you are going to construct a flood relief channel for the Mississippi itself, which I think must be contemplated by the use of the figures "1,000,000 feet," then the estimate may be right. That proposition has been made, but I have not been able to think of it seriously.

The CHAIRMAN. That was the proposition.

Mr. COOLEY. As related to the diversion of the Arkansas and Red Rivers, that would represent a minor fraction. My suggestion, however, is very tentative.

I wish to recur to the proposition of holding the banks of the lower Mississippi about which I and other engineers feel so seriously, and to outline the reasons in the premises. In my day, we estimated the output of detritus from the Missouri River at 289,000,000 cubic yards per annum and these figures, I believe, are still in use. This represents a square mile of territory nearly 300 feet in depth. The other great tributaries, the upper Mississippi and the Ohio, are relatively small carriers of detritus and the total amount passing Cairo is estimated at about 400,000,000 cubic yards or a square mile about 400 feet deep. The amount passing into the Gulf of Mexico, as estimated, happens to be the equivalent of that passing Cairo, or about 400,000,000 cubic yards. Between Cairo and the Red River, however, the annual bank erosion averages a billion yards, or a square mile about 1,000 feet deep. and this is worked over by the forces of the river, or transferred from point to point and dumped many feet deep on the crossing below, thus obstructing the low-water channel; in fact, I have sounded the river opposite Plum Point and Osceola when the bed everywhere was more than 4 feet above the low-water plane. As the water falls, it must wallow a new channel through the crossing and may not repeat itself in the same locality, resulting in new angles of flow and new disturbances in the bends below in the next high water.

This billion yards, worked over from year to year, is an expression of the surplus dynamic energy, and it will be greatly increased by conditions which add to the power of the stream and accelerate its velocity. If we hold the banks, thus curtailing this erosion, I think every engineer agrees that we will work a radical transformation, and only in some such way can we produce a real deep waterway. Furthermore, the carrying out of a general policy of water conservation should diminish the amount of detritus coming from above.

The CHAIRMAN (Mr. Humphreys). Mr. Cooley, one question. If you were to undertake to improve the lower Mississippi from Cairo to the Gulf, with a view to maintaining a channel of 10 feet or greater than that, how would you proceed?

Mr. COOLEY. The first thing I would do would be to hold the banks; get rid of this dumping on the crossings each year.

The CHAIRMAN. That is, this revetment process?

Mr. COOLEY. Yes, sir.

The CHAIRMAN. Do you think it can be done without that?

Mr. COOLEY. No, sir.

Mr. FOSTER. What effect would that have on the floods, in your judgment?

Mr. COOLEY. It would make a better carrier of water and reduce the flood heights.

Mr. FOSTER. It would reduce the floods?

Mr. COOLEY. Yes, sir; by making a better carrier of water.

Mr. FOSTER. And would maintain the channel there?

Mr. COOLEY. Yes, sir; a much better channel. In fact, the only way you can maintain a channel is to stop that continual erosion and dumping on the crossings and filling up all the low-water channels you make year by year.

The effect would be revolutionary, but beyond that I think the further improvement consists in increasing the low-water supply of the stream. I talked once with Gen. Marshall, who did not agree with me on many things, but who went me one better on this question. I stated to him that I believed the effect of holding the banks and some betterments on the crossings would be not less than 14 feet from Cairo to the Gulf at the minimum stages, and Gen. Marshall said to me, "I would just as readily assume it would be 20 as 14 feet." You can not tell. The effect would certainly be large.

The CHAIRMAN. I think all the engineers who have made a serious study of the question are in agreement on the proposition that it would produce at least 14 feet?

Mr. COOLEY. Yes, sir; I think so.

THE "SIR WILLIAM WILLCOCKS" LETTER.

CHICAGO, ILL., *July 3, 1914*.

Mr. W. K. KAVANAUGH,
President, The Lakes to the Gulf Deep Waterway Association,
St. Louis, Mo.

DEAR MR. KAVANAUGH: I have yours of June 29, inclosing copy of Report of Board of Engineers on Flood Prevention in the Ohio and Erie basins, which I return herewith as requested. I also have copy of interview with Sir William Willcocks, published in the New York Times, on which you wish me to comment.

1. Sir William Willcocks refers to the experience of the ancients respecting the control of the Euphrates and Tigris Rivers, through the plains of Mesopotamia and the control of the Nile in Egypt. Too little is popularly known respecting the ancient control of these streams, and it is regretted that Sir William has not presented the results of his researches and those of other investigators for historical reasons, as well as the experience which they teach.

2. The Nile, at Assuan, is similar in flood volume to the Missouri River at Sioux City, and is not unlike the Missouri in the area of basin and in traversing a semiarid region from its real water sources in the mountains and high lands, but its floods are so regular and so related to the growing season that the Nile has been regarded as the "mother" of Egypt from the remote and mystical past. The fertility of Egypt has been limited to the flood plain, some 5,000,000 acre, and has been dependent upon the Nile overflows. There is no levee system according to our definition, and the attempts made by Ishmael Pasha, to use ditch methods of irrigation in the delta by means of the barrage, have resulted in sterilizing the soil through alkali deposits. The Assuan dam gives high level irrigation and increases the possible area of cultivation. The control of the floods by the ancients is related in the accounts of Herodotus, who described Lake Moeris and its functions, and the matter has been studied by Cope Whitehouse and other investigators. It has been suggested that this reservoir was manipulated in the interests of the first corn corner, by the great Pharaoh and his Hebrew premier, and that thereby they produced seven years of plenty and filled the King's granaries, and later seven years of famine in which the King became the personal owner of all the treasure, the lands, and even the people themselves.

3. The basin of the Euphrates and Tigris Rivers together cover an area little greater than that of the upper Mississippi River and the source streams are in a mountain region of moderate rainfall, semiarid in part, so that the water supply which passes through the Mesopotamian plain is probably much inferior to that from the upper Mississippi. This plain is now a desolate waste infested by vagabond Bedouins, and is the graveyard of several dynastic wrecks—the Chaldeans, the Assyrians, the Persians, the Saleuces, and the Saracens. This plain supported by irrigation a population which was able to "lick" Egypt, which probably contained at one time 10,000,000 people on 5,000,000 acres of cultivated land. The irrigation method was probably by canals and ditches, as our history tells us that Cyrus turned aside the Euphrates River and marched his army into Babylon through the river bed. Imagine this being done to the Mississippi River below Cairo, where the flood volume is six times greater than that of the Nile and several more times greater than that of the Euphrates. Methods of the ancients are undoubtedly suggestive, and the lessons are very impressive. but the precedents are not to be literally followed without a

clear understanding. Physical conditions may not change, but there is some interval between the ideas that fashioned the Roman galleon and those underlying the modern steamship.

4. The projected use of the St. Francis Basin as a reservoir for flood regulation, pending the time when the river below shall adjust itself to the new conditions imposed by levees, is probably an inheritance from the ancient works of Egypt and Mesopotamia. This project was worked out in detail by Mr. James A. Seddon and presented in a paper before the Western Society of Engineers in 1900, and discussed at length. The idea of keeping the St. Francis Basin open until the river had accommodated itself below was held for many years, but this has yielded to the importunity of investors in these lands. When Mr. Seddon's paper came out, engineers who discussed it—including myself—were censured by the leaders in the lower country. The Mississippi River Commission undertook to investigate the proposition more fully but found it expedient to drop the same. I trust that Mr. Seddon is still on earth and will have the pleasure of reading such distinguished indorsement of his scheme. The Seddon paper and discussions were printed by the Illinois Valley Association and circulated as a matter of public information. I am sending you a copy under separate cover.

5. Sir William Willcocks properly recognizes the stabilizing of the river bed as the primary and fundamental requirement. This has always been urged by our association as essential to deep-water navigation and to the security of a levee system. Sir William also recognizes that the restraint of all flood waters to the stream increases its dynamic energy, and we should put our tiger behind the bars before we file his teeth and grind his claws; in other words, a levee system along the uncontrolled river is potential suicide.

6. Sir William Willcocks suggests, with caution, eventual shortening of the river by cut-offs. Such a program would further accentuate the dynamic energy of the stream, which almost exceeds our power of control under levee conditions only. The effect of increased energy is to either lengthen or broaden the river bed or lessen the declivity in a deeper channel. To broaden the river bed is to increase the difficulty of control. To materially change the declivity requires a long period of time and develops new problems in a river as long as the Mississippi between Cairo and Red River. It is conceivable that such a program might be worked out by cutting off a bend at a time from Cairo downstream where the slope would be arrested by the rock bottoms at Commerce and at Mound City. That the ancients proceeded upstream from the mouth in the treatment of the Euphrates may be true, but this is probably due to the fact that Chaldean civilization expanded from this vicinity up the Mesopotamian plain rather than to any primitive dictum in river hydraulics. As you know, I have advocated the construction of two dams in the middle Mississippi for the purpose of taking out excess in slope, and thus producing a deeper and more stable channel, and I am therefore unable to concur in the program of slope accentuation.

7. Sir William seems to think lightly of the utility of reservoirs on source streams. On the other hand, the Board of Engineers on Flood Prevention in the Ohio and Erie Basins substantially adopt this method and recommend an examination of a large number of sites on over 20 tributary streams. Such treatment is undoubtedly of great value and importance to the local and upper valleys, and it may be ameliorative of such floods as originate in source streams but not remedial in many floods that afflict the lower valley. Flood prevention is but one of the several objects to be attained in a broad scheme for the conservation of our water resources, and we must narrow our horizon and limit our purpose in order to say that one method is more important than all others. All have their place in the broad problem—from forestry, better tillage, and prevention of soil erosion down through reservoirs, embankments, and control of river beds. It goes without saying that the stabilizing of river beds and the equalization of the flow therein are primary purposes, while the other items of conservation are largely agencies to such end.

8. We are undoubtedly indebted to Sir William Willcocks for timely and valuable advice, and if his views had been expressed at greater length there would probably be less to criticize. I think, further, that if he could have taken up the subject matter with those among us who are most familiar with our conditions he would have reached conclusions which could have been accepted without qualification

Yours, truly,

LYMAN E. COOLEY.

Appendix D.

COMMUNICATION FROM MAJ. T. G. DABNEY, CHIEF ENGINEER OF THE UPPER YAZOO LEVEE DISTRICT, SUBMITTED TO THE HOUSE COMMITTEE ON RIVERS AND HARBORS ON DECEMBER 3 AND 4, 1913.

Mr. Chairman, as one who has been associated professionally with the Mississippi River problem for many years, the writer craves permission to submit for your consideration some matured reflections of his on the subject.

The necessity of erecting barriers along the banks of the Mississippi River in the form of levees to serve as protection against its flood waters is so obvious and pressing to those who live behind these levees that their vision does not reach beyond the lines of levees in contemplating the subject of flood control.

The clamor for money to build up these defenses against the floods from the dwellers in the overflowed territory is both natural and just, and ought not to go unheeded by the United States Congress.

But there is another factor, and a very fundamental one, in the problem of flood and river control, a recognition of which the vision of levee advocates falls short of; and it behooves those who are in a position to take a wider view of the whole subject to give due recogand due emphasis to the importance of its proper consideration.

This factor is giving stability to the ever-shifting banks of the river and permanence to its shore lines.

The proved and accepted method of accomplishing this result is by the application to the caving banks of a revetment of willow mattresses ballasted with raprap stone.

The history of levee building along the Mississippi River during the past 30 years, and indeed for a much longer period, has mainly been a record of restoring the continuity of levee lines that have been repeatedly and regularly breached by the encroachments of caving banks.

Successive lines of new levee have followed each from time to time with much regularity around the same caving bends, with ever-increasing length and cumulative difficulties in physical obstacles to be encountered from the necessity of locating on lower ground as levee renewals have receded farther back from the river front, not infrequently involving the traversing of low swamps, lakes, and bayou channels, thus ever increasing the burden of cost of maintaining continuous lines of defense.

It may be said with assurance that the burden of renewing levees broken by caving banks has absorbed the great bulk of the many millions of dollars that have been expended by the people of the lower Mississippi Valley during the past half century in their strenuous struggles to protect themselves from the floods, and the enormous task of combating the destructive activities of caving banks has so far sapped their resources that they have perforce become suppliCants to the Federal Government for aid in bearing their burden.

It is further to be noted in this connection that levee engineers are reluctant to incur the cost of building to a standard of assured efficiency, with the certain prospect that the levees so built are to be swallowed up by the river in a few years.

It must also be recognized that this process of levee renewals around caving bends can not be carried forward indefinitely, but must reach a limit where the cumulative burden of cost, the encountering of physical obstacles that shall become insurmountable, and the continual sacrifice of the lands designed to be protected must eventuate in a breakdown of such a blundering system by its own weight, the cost of these levee renewals having already reached in many situations the almost prohibitive amounts of $100,000 to $200,000 per mile of new levee, which is comparable with the unit cost of bank protection

It must be conceded, in any rational contemplation of the subject of levee protection and flood control, having in view the attainment of a perfected system of defense against the floods, that these enormously expensive lines of levees must have permanent locations by restraining the encroachment of caving banks. But this essential feature of the problem has been almost wholly neglected to the present time in the provision made by the Congress for river improvement.

There is another phase of this subject that shall here be adverted to with such brevity as may be, with the reflection that this is not a proper occasion for an elaboration of the whole problem of Mississippi River improvement and control.

There are other functions of bank protection than that of giving permanence to levee lines which are of vital, indeed fundamental, importance in their relation to flood and river control. The subject is too large a one to be elaborated here and must be briefly treated.

The vast quantities of earth that are dropped into the river channel each year from caving banks may be indicated by citing one example in the writer's recent experience in which the conditions were not of maximum proportions. In this case the estimated quantity of material that caved into the channel in a single season is over 2,000,000 cubic yards on an extent of bank a little more than 2 miles long, with a superficies of 102 acres of very valuable land.

This material is transported only a few miles by the current and is dropped into the channel before the next bend is reached, where a similar load is received and disposed of in the same manner.

Thus the caving banks furnish the material by which the river obstructs its own flow, which process is repeated every year in every bend between Cairo and the mouth of Red River, enormous quantities of earth being continually eroded from the banks and straightway dropped into the river channel to obstruct the flood flow and place shoals in the track of navigation.

Stop the caving and this suppply is cut off, and the current surging along the channel with flood energy and no load to carry, or one of negligible proportions, must inevitably exert this energy in removing obstructions to its passage, with the further effect of so increasing the discharge capacity of the channel as to materially reduce the elevation of flood planes, and so contribute directly to the increased efficiency of the levees. An important element in producing this effect of a greatly improved channel both for flood discharge and for navigation is the fixation of the line of flood flow resulting from a permanently fixed shore line by which the flood energy is to be perpetually exerted along one path of flood flow, instead of as at present continually shifting its position from hour to hour and day to day while caving activity is going on.

The beneficial results of stable river banks in improving the navigable capacity of the river must be obvious to studious minds and can not be further enlarged upon here, but the salient features of the problem of Mississippi River improvement, from the writer's standpoint, may be summarized in a few words, to wit:

There is a sufficient volume of water passing down the channel of the river during the period of its minimum flow to afford a navigable depth of about 25 feet from Cairo down if properly handled.

The first, and absolutely essential, factor in the problem is to give permanence to the shore lines, and consequently to the line of flood flow in the channel.

It has been abundantly demonstrated by the operations of the Mississippi River Commission during the past years that the caving of the river banks can be effectually stopped by the application of revetment of willow mattresses at a known cost.

This having been accomplished, little else shall be required, except some inconsiderable auxiliary work for contracting wide places in the low-water channel.

The effect of giving stability to the caving banks involves also a vital adjunct to navigation, which can here be only alluded to briefly. It is that facilities shall be afforded for the erection of permanent freight-handling devices along the river where none now exists, nor can exist on shifting banks, and the want of which is a fatal handicap upon any large development of navigation on the lower Mississippi River.

These tenets the writer has adhered to from an early period in his study of the Mississippi River problem.

In conclusion, it should appear from the foregoing that, in the writer's opinion, bank stability is a fundamental necessity in any plans for the rectification and control of the Mississippi River in all phases of the problem, and he greatly deprecates the time already lost in which this vital feature of river improvement ought to have been carried forward.

He also deprecates the tardy and half-hearted recognition which has been but recently accorded to the work of bank revetment by the Federal authorities, as shown by the method provided in appropriation bills for Mississippi River improvement and the manner of application of the money appropriated.

For example, first comes a specific provision for levees; second, for dredging the channel and caring for plant; third, for surveys; and if any of the appropriation is then left, it may be expended on bank revetment.

It is right and proper that provision shall be made for all the above-enumerated branches of river improvement work, but the writer is disposed to insist that bank revetment should take prime rank as the sine qua non upon which the whole problem hangs, and along with levees to be considered and treated as a feature of paramount importance, for which specific provision should be made in all appropriation bills for the Mississippi River.

It may be said, in the language of the Scriptures, "This ought ye to have done, and not to have left the other undone."

The writer made a few years ago an estimate, based upon long familiarity with the subject of the total cost of reveting all the caving bends between Cairo and the vicinity of the mouth of Red River. Below that locality there are no caving banks, broadly speaking, and consequently there are no shoal places in the river channel, a fact which has important significance in this connection.

The amount of this estimate is $75,000,000, and it was suggested then that with a specific appropriation of, say, $5,000,000 a year for bank revetment the work could all be accomplished within 15 to 20 years, while at the same time the field for the employment of dredges to open channels across the numerous shoal bars would be correspondingly narrowed as the revetment work progressed.

Finally, this is a plea for expending some of the energy devoted to the work of Mississippi River improvement on permanent work, instead of pursuing the past and present policy of perpetual temporizing with no prospect of ever reaching any definite goal. This work is going to be accomplished sooner or later as a logical necessity, and those who are living at that time shall see seagoing vessels lying in the port of Cairo.

T. G. Dabney.

APPENDIX E.

STATEMENT SUBMITTED BY MR. GEORGE H. MAXWELL, EXECUTIVE DIRECTOR NATIONAL RECLAMATION ASSOCIATION, WASHINGTON, D. C.

Mr. MAXWELL. Mr. Chairman and gentlemen of the committee, for more than 20 years I have contended that the constitutional power of the Federal Government to enter upon the work of flood control is not necessarily limited by the commerce clause of the Constitution.

NATIONAL DEFENSE AGAINST NATURE'S DESTROYING FORCES.

When we take into consideration the enormously large sections of the earth's surface, like northern Africa, Asia Minor, Mesopotamia, and the immense areas in Arabia, Palestine, Persia, and other parts of Asia that have been entirely destroyed by the failure of the people to control and conserve the resources of nature, it becomes plain that it is just as much the duty of the Federal Government to do the things that are necessary to protect our country from destruction in this manner by the invasion of nature's destroying forces as it is to protect it from the invasion of a foreign enemy.

I mention that merely in order that it may be understood that in undertaking to tie everything that we are asking the Government at this time to do for river regulation to the commerce clause of the Constitution we do not by any means take the position that it must necessarily be so connected. At the same time there is no doubt of the fact that the great majority of the people of the United States have been trained for years to the belief that unless a plan for flood control is a part of a broader plan for the improvement of navigation that the National Government has no control over the matter. For that reason I apprehend that if through the efforts of this committee a bill is presented to the Congress taking up the matter of flood control for the protection of one section of the country only, that as soon as it is generally understood in all parts of the United States that the Government has undertaken that work of flood control there will very naturally and properly be a perfect stampede of claimants for protection of that kind from all over the country. For that reason it will be exceedingly unwise to undertake to pass a measure at this time which would limit the immediate benefits from this action of the Government to any one section. It will not only be unwise. It will be most unfair and unjust to other sections of the country.

I speak of that not because I do not fully appreciate the ultimate needs and the immediate needs of the lower Mississippi River, but merely as a word possibly of caution which may result in avoiding the loosening of the stone that would start an avalanche of opposition and make an interminable amount of controversy on the subject at this session of Congress.

I think that the great mass of the people of all sections of the country who are interested in flood protection are willing that the lower Mississippi Valley should have precedence, but if all other sections should be entirely ignored I question very much whether a measure of that character would not arouse very great opposition. In all the West, and in the Ohio Valley, where the movement has crystallized behind what is known as the Newlands-Broussard river-regulation bill, which was first indorsed by the Flood Commission of Pittsburgh—the bill being printed in full in their report—the people know that that bill provides for all sections of the country, and they will understand, if a bill along those general lines is passed, that all sections of the country have been considered and will be taken care of ultimately.

In the consideration of the different questions involved in connection with this proposed legislation, the Mississippi River is so overshadowing in its magnitude, in comparison with any other section of the country, that I want to say a few words about the other sections first, because I know if I get into the discussion of the Mississippi River I will never get back to anything else.

THE COLORADO RIVER.

In the first place, with reference to the Colorado River: From the standpoint of urgency, or immediate construction—not investigations, but immediate construction—in so far as investigations are concerned, and in so far as knowledge of the facts is concerned, the Colorado River is a more completely surveyed and investigated problem than the Mississippi River, because the elements that control it are much more capable of absolute knowledge, without the necessity for knowing the underground conditions or making investigations that would have to be made with reference to the underground strata.

The condition on the Colorado River is this:

The river once broke through into the Imperial Valley, because of taking a chance which very likely the people of the valley should not have taken, cutting an inlet in order to help the intake of their canal, without properly controlling it, with the result that if it had not been stopped finally the whole Colorado River would have gone into that valley, and one of the most fertile regions of the whole United States would have been completely destroyed and covered with a flood which could not have been drained off.

I ask the particular attention of the committee to that point with reference to the Imperial Valley, for this reason: All through the Mississippi Valley, if the flood gets over the levees and fills up the basins, they drain off into the Gulf of Mexico, but the Imperial Valley has no outlet. It runs down to a point at least 100 feet below sea level, with no outlet, so that if the river should ever break through and fill the basin, as it was undoubtedly at one time naturally filled, that rich alluvial basin would be for all time lost to us until the sun had evaporated the flood which had filled the basin in that way. The water that went in from the last break will never go out until it evaporates; that is the only way it can get out.

The flood of last winter went to within 18 inches of the top of the sill at the Hanlon head. If it had not been for the fact that the levees went all to pieces on the Arizona side it would have gone over the protection works on the California side, and no man could foresee what the results might have been.

The Colorado River is one of the most treacherous and unruly rivers in the world. When you think of a distance of only 18 inches between the level of a flood and the top of the sill at the heading, and then bear in mind that there were waves in that river at the time of that flood that were 20 feet high at Yuma, you can get some idea of the possibilities of damage from such a flood in the Colorado River.

That is why I say that when it is understood that this committee is dealing with this question in a broad, constructive way, the people of the Southwest are going to feel that if it comes to a question of emergency, that their necessities are in some respects really more acute than the necessities of the lower Mississippi Valley.

SOUTHERN CALIFORNIA.

Again, take it in southern California. The flood of two years ago carried 4,000,000 cubic yards of silt into the Los Angeles Harbor, and the flood of last year a very large amount—I have not the exact figures; I do not think it has been accurately estimated yet.

Within less than two years, if ample funds were provided, those floods could be controlled in the mountain watersheds, and the intervening valley so as to practically minimize the danger of sediment going into the harbor and very largely do away with the necessity for building the dyke. They are proposing to build what is known as the Dominguez Dyke, merely to change the mouth of the river and construct a temporary safeguard against the silt going into the harbor. Of course, it should be built at once, unless the watershed work can be done immediately and comprehensively.

The people of Los Angeles County are proposing a bond issue of about $3,000,000, which is as much as they think they can carry at the present time, for the purpose of doing the local work necessary to keep that flood from doing damage and to keep the silt from being brought down. If the National Government at this time would cooperate, even to the extent of no more than the county is willing to do, and let it be done immediately, it would save the Government a danger there which is imminent and acute and of enormous proportions, and so far as flood control and flood damage are concerned, the way a flood rips and tears through the highly improved orange groves and homes and towns of Southern California is something beyond any comparison with the overflow of the lower Mississippi Valley, except in a few of the more highly improved localities. Of course, every one acquainted with Southern California appreciates that fact.

SAN JOAQUIN VALLEY.

You go into the San Joaquin Valley, and you have this condition: Some years ago the Army engineers built what is known as the "Stockton Cut-Off Canal," the idea being that by carrying the water around one side of Stockton through a canal that it would prevent from filling up with silt what is known as the "Stockton Channel," and in that way aid navigation. The Army engineers made a mistake. The fall of the canal was not sufficient to carry the sediment and during the first big flood it filled up. The levee was built on the Stockton side, because the purpose of the structure had really been to protect Stockton from floods. The result was the flood went out over a very large area on the other side which had never before been flooded, and those people have filed claims against the Government for something like $400,000, caused by the building of a canal which was built primarily to protect Stockton from floods.

There was a reservoir site inside of the foothill country known as the Calaveras Reservoir, which could have been built and which would have entirely prevented the flood, and which would have prevented the damage which was being done by the washing away of the farm lands in the valley, and those people who are now subject to that damage caused by the canal built by the United States are subject to it at any moment; any big flood that comes may do them $400,000 more of damage. The amount which is necessary to build the Calaveras Reservoir and entirely obviate that is a very small amount, comparatively, I mean. A million dollars or thereabouts would put that situation in good shape.

In the San Joaquin Valley, in the lower part of the valley, we have the problem of Tulare Lake, a vast agricultural section, one of the richest in the world, which is subject to overflow completely in the wet years by the floods from Kings River. Of course, we hope in the course of the future years that reservoirs and high-line canals will control those floods, but it will be a long period of time before that is accomplished. Those people are in exactly the same condition as the people in the lower Mississippi Valley, and when I say the "lower Mississippi Valley" I mean from Cairo down; and I think they may justly claim that when it comes to a consideration of emergencies that their case should be considered.

CONDITIONS ARE KNOWN.

I want to make it clear, Mr. Chairman, that in these cases there is no necessity for a further investigation. The exact conditions are known. There is not anything in the world necessary except to go and do certain things. If, in the case of the Colorado River, the appropriation were turned over to the Reclamation Service, they could go right ahead with the work and complete it within a year In Southern California the work should be done, I think, through the Forest Service. If the money were turned over to the Forest Service, and these check dams which have been accepted as the solution of this problem were built there by the Forest Service, or the Reclamation Service, everything needed for the work is right there, and they know exactly what to do to-morrow if they had the money to proceed with construction.

The Calaveras Reservoir site has been surveyed, cost, capacity, and everything is known, and the Reclamation Service could have that reservoir completed in less than two years.

So far as the drainage canal through the San Joaquin Valley is concerned, which should be built for the drainage of the Tulare Lake country, and which would be an outlet for the waters that should be drained out from the orchards and vineyards in that country, where there are no proper drainage facilities, that could be built without any delay at all for surveys or investigations. The complete knowledge necessary upon which to base construction could be taken right from existing maps and data on file in the departments.

These investigations and surveys have been made by the United States Government—the Reclamation Service and the Geological Survey. The Geological Survey has completed their topographic maps of the San Joaquin Valley, so that the levels are entirely known; in fact, they have been at work for nearly 15 years perfecting those maps.

The work in Southern California that is needed to be done so promptly is simply building what is known in that country as "check dams," little dams that completely check the destructive velocity of the torrent coming down the canyon, and in that way prevent the torrent from bringing down into the valley the débris and sediment which causes all the damage after it gets into the valley, the danger there being caused by the filling up of the channels with this sediment and the washing away of the farms below and the carrying of the sediment on down into the harbor.

CONTROL OF COLORADO RIVER FLOODS.

For the control of the floods of the Colorado River, the immediate work needed there is levees, but levees are only a temporary expedient, because no matter what they may do in building levees, the river will eventually fill up the channel between the levees, unless they go back and take the floods out on to the mesas and distribute them over large areas, practically reproducing artificially in the Colorado River what is the natural condition in the Nile Valley. The flood waters should be raised to the level of the mesas by high weirs like the Laguna Dam above Yuma.

An understanding with Mexico is necessary only with reference to the low-water flow of the river, which is needed for irrigation. Of course, we do not have the right to take the low-water flow away, but there would be no question ever raised of our right to control these floods and hold back the flood waters, because they will do just as much damage below the Mexican line as above. The Mexican owners would be very glad, indeed, to have those flood waters controlled, because by controlling the flood completely above the Imperial Valley they are necessarily controlled so as to obviate damage in Mexico. If the flow of the Colorado River were regulated and the entire floor of the valley irrigated and cultivated, the return seepage would largely increase the low-water flow of the river at the Mexican line. The point with reference to the Colorado River is that the dangerous floods they have in the lower valley are caused by a combination of floods in the Colorado and Gila, and both of those rivers can be completely controlled by simply putting in large waste weirs, like the Laguna Dam, and putting the water onto the mesas and leading it out over hundreds of thousands of acres of arid mesas where the silt of the water would be of most wonderful benefit to the land, just as the floods of the Nile have fertilized that valley for centuries.

The Salton Sea originally, before this Colorado River break, was a remnant of the old original sea which filled the entire Imperial Valley, but it had practically all disappeared by evaporation.

It rose to quite a height during the overflow from the break. It came up to the old Southern Pacific track, but it has been evaporating for the last few years. In that hot country water evaporates quite rapidly, and it is going down every year, but, of course, if the entire valley should fill, as there is always danger of occurring, it would take many years for the water to finally evaporate, because it would be 100 feet deep in some parts of the valley.

The works for the control of the Colorado River should begin up near the mouth of the canyon. The Gila could be controlled almost immediately after it leaves its canyon, and the Colorado should be controlled as far as possible up the river, after it comes out of the canyon, at or above the Bulls Head Reservoir site and at other diversion points between there and the Laguna Dam.

That is all I care to say with reference to the Colorado River, and these other locations. I have brought those questions up more particularly to endeavor to make it clear to the committee that it is essentially necessary for the safety of these other communities that a general measure should be passed in which there should be an apportionment of at least a moderate sum for immediate work—work which in its very nature is emergency work.

THE PITTSBURGH DISTRICT FLOODS.

With reference to the Pittsburgh flood situation, I want to say just a few words:

The importance of prompt action in the Pittsburgh district arises from the necessity for acquiring the ownership of the reservoir sites before they all pass into private ownership. Since the publication of the Pittsburgh flood report, I am informed that quite a number of those reservoir sites have passed into private ownership, and if this Government is going to enter upon the policy of flood control, certainly for the lack of a few dollars required to be turned over to the White Mountain-Appalachian Forest Commission to acquire those reservoir sites the Government ought not to take the risk of indefinitely delaying the construction of those reservoirs, because the sites will fall into private speculative ownership. I think that any fair-minded man will agree to that.

That it would take some little time to build reservoirs is another proposition. We have got to recognize that fact; but if those reservoir sites should fall into speculative ownership, there is a prospect of interminable delay resulting only in the difference as to the amount which should be paid for the sites, and the quicker the United States Government acquires them the less likelihood there is of that kind of delay.

The survey has already been made of the watershed, and very thoroughly made, by the Pittsburgh Flood Commission.

That the Government should build a reservoir on that survey I would not contend, but that the location of the site necessary to build it is established by that report, I think there is no question. And furthermore, a very large part of western Pennsylvania has been completely surveyed and mapped by the topographic branch of the Geological Survey, and that work should be entirely completed without delay. All of West Virginia is completed.

The whole question as to the reservoir sites necessary in the control of the flood problem is so thoroughly thrashed out in the report of the Pittsburgh Flood Commission that it would be merely borrowing trouble to await the completion of another long and expensive investigation before acquiring the sites which that report makes clear must be eventually acquired, and should therefore be immediately acquired.

Anyone who will take that report and go through it carefully will see that the engineers of the flood commission, who are just as good engineers as any Army engineers who have ever lived, have examined that question in the most elaborate manner, have published a report upon the location of reservoir sites, and have in their survey covered everything, even to the contour lines. I am not contending that the Government should go on and build on those plans, but I do contend that it is information upon which the Government should protect itself by acquiring the sites; that is all.

Where such exact and careful and thorough surveys as those made by the Pittsburgh Flood Commission are available, the Government would not be justified in waiting during another long period of investigation while the speculators acquired the sites.

ADMINISTRATIVE MACHINERY SHOULD BE CREATED.

The administrative machinery necessary for governmental action should be created by a bill embodying the authority for immediate action which is conferred upon the waterways commission and the river-regulation board by the Newlands-Broussard bill. A board having power to act in such matters should be created, then that board should determine whether or not this survey is sufficiently detailed and accurate, and it would be a matter of 30 days to run it over and check it up.

I am not advocating that the Government should go in and spend its money without this matter being acted upon by an authorized board of the United States Government having just as much authority in the matter, for instance, as the Army engineers have to-day where authorized to act, or as the Secretary of the Interior has under the reclamation act. The creation of such a board, with immediate power to act, and to do these things which require some immediate investment of money, is what I am now urging upon the committee. That is all provided for in this Newlands river-regulation bill which is now before the committee.

It should be left to the board created by that bill to decide, in the case of the acquisition of reservoir sites, whether the private surveys were sufficiently accurate to justify the Government in acquiring any site for the protection of the Government before it passed into private speculative ownership.

If you had a board that is officially responsible to the Government and that board had authority to put engineers into the field to check up the Pittsburgh report, exactly as the Army engineers did, and they did check it up, that would be the second time the Government has checked it up, and that should decide the two points raised by the Army engineers; one, that it was not justified in the interest of navigation, and the other that the reservoirs would cost more than the Pittsburgh Flood Commission estimated. Those were the only objections urged by the Army engineers. If they wait until those reservoir sites are all absorbed into private ownership and have been acquired by people who got them for no other purpose than to sell them to the United States Government or to sell them to some one else, the delay will be seriously detrimental to the interests of the public. Hence it is most essential that the Government should act without delay.

What I am contending for is for the passage of a general measure like the Newlands river-regulation bill, under which a board or boards will be created having authority to pass upon these things and giving them the authority and the funds to enable them to act promptly, so that, for instance, the danger to the Imperial Valley shall no longer hang over them; so that the danger from floods in southern California shall no longer hang over them; so that the danger also to the Sacramento and San Joaquin Valleys shall no longer hang over them; and that relief should be given promptly, without the interminable delays that we have had to pass through in past years before anything could be done.

That is what I contend; and I think, furthermore, very few people understand how marvelously accurate and complete the surveys of the Geological Survey, Reclamation Service, Forest Service, and Army engineers are with reference to the whole western half of the United States. I do not think they are so complete in the East.

OHIO RIVER FLOOD CONTROL.

There are a few questions that have been frequently raised during the last few years in relation to flood control on the Ohio River which are very largely the result of a wrong conception of the different characters of reservoirs which are proposed. For instance, I was in New Orleans when the flood of 1913 took place, which very largely came from the Ohio River, as you all remember. Gen. Bixby at that time gave out the statement, which went broadcast over the United States, substantially to the effect that it was an impossibility to control such a flood as that with reservoirs, and that it would have required a reservoir as large as the State of New Jersey to hold all that water.

After the flood the people at Dayton formed an association and raised a subscription of something over a million dollars to work out plans for protection. They sent to Memphis and employed a levee engineer—Mr. Morgan, of the Morgan Engineering Co.—to take up the work on the Miami River. After careful investigation, Mr. Morgan reported that the best way to protect Dayton from floods is by a system of reservoirs.

But right there is the point that requires explanation. The reservoirs which they are planning are not storage reservoirs in the sense in which we understand that term when we ordinarily talk about a storage reservoir, which is anything to hold water throughout the year in order to provide for the beneficial use of the water later in the season than would have been possible if it had taken its natural course in the stream.

A similar investigation has been made of the section of the country around Columbus on the Scioto River, and they are planning for very considerable protection there by reservoirs.

The reservoirs they propose are really emergency impounding basins. The Dayton flood was caused by forcing through a channel more water than it could carry in a short period of time. The channel would have carried it off in perhaps nine days, and the flood was caused by forcing it through in about three days. The proposition is to hold that surplus excess water back long enough to permit it to follow in behind the crest of the flood, giving to the channel only what it will carry at any one time. By holding back the waters above Dayton on the Miami and above Chillicothe and Columbus on the Scioto—and I have no doubt that the same plan could be carried out on the Muskingum—they can practically control the floods from the watersheds of southern Ohio into the Ohio River.

Reservoirs for flood control have been opposed on account of the value of the land that would be covered. The fact of the matter is, the only thing that is necessary to make it possible to use those valleys as such impeding reservoirs or emergency impounding basins, or detention basins, is that the houses should be moved and the land be devoted to such uses as that once in 10 or 20 or 30 years it may be temporarily overflowed for a short period of time.

The overflowing of those lands at those long intervals, and the settling of the silt on the land which is deposited by checking the velocity of the water is of infinite value to the land as a fertilizer; so that instead of taking these reservoir sites out of use and destroying agricultural land, a system of flood protection all over the State of Ohio will result in very largely improving the agricultural value of the land which is used for impeding reservoirs or detention basins. I hope I make that point clear, because that objection has been raised more than any other as one of the reasons why you can not control the floods on the Ohio River with reservoirs. You can, and they are proposing to do it on the Ohio streams by local means.

Now, when you pass on up to the Pittsburgh district, you find an entirely different character of country. The reservoir sites there are very largely in a mountainous country, where the land is of comparatively small value. The whole value of the land which will be taken for reservoirs is infinitesimal when compared with the value of the land that is overflowed in the valleys below, and which would be protected from overflow by the reservoir system.

RESERVOIRS ABOVE PITTSBURGH.

When you get into the Pittsburgh section you also strike an entirely different condition with reference to the uses of the reservoirs. That is one point that I would like to make, perhaps, just a little clearer; that is, the possibility of the use of the reservoirs for both power and flood control, and the relation of the reservoir system to navigation. There is one point that ought to be kept constantly in mind, which is that we have a succession of average seasons followed by a very wet season with unusual floods. We will say, to illustrate, that during a series of ordinary seasons the larger proportion of the entire surface flow can be stored in reservoirs which will hold practically all of the winter flow of the stream. To that extent the reservoir storage can be used for power.

One of the engineers of the Pittsburgh flood commission expressed that very clearly in a hearing at Harrisburg, that the greatest asset of the power company is a full reservoir, and the asset of the Flood Control Commission is an empty reservoir. If you fill the reservoirs up every year to the level that they are used for power, you have reached the limit of storage for the benefit of navigation, because storage for navigation, which was only secured in unusual and extraordinary flood years, is not a thing that can be depended upon as a permanent adjunct to navigation. In other words, practically all the storage capacity that is available for power will benefit navigation. Beyond that you have the necessity for storage for extraordinary flood years, and that surplus water must be controlled in reservoirs which, to the utmost possible extent, may have to be kept empty. Consequently they have practically no value for power and their value for navigation is not in the increase of low-water flow, but in reducing flood levels in cases where the flood itself is a menace to navigation.

The point I am coming to is this: That the difficulty which has been suggested really does not exist of trying to hold the water back in a flood-control reservoir for navigation. The flood-control reservoir would not be built for that purpose. You would empty it rather than take the chances that you might need the space to store a later storm and find it full when the later storm came. You will usually fix your level in the reservoir up to which point you propose to use the water both for power and for navigation; beyond that it is practically flood-control space, and for purposes of flood protection alone the quicker you can get it out of the reservoir and empty the reservoir into the river the better. In other words, all the storage intended not for power but for flood control alone should be emptied just as quickly as the channel will carry it, so that if you have another flood coming in a week you will have the flood-control space to take care of it. You can do that without any interference with the storage capacity, which is used for power and for the benefit of navigation.

I must confess that the experience of the advocates of the White Mountain and Appalachian bill satisfied most of us that we have to work this out from the standpoint of the benefits to navigation, and that is something I have always undertaken to do in order to make it clear that this flood-control policy would benefit navigation.

A CENTRALIZED SYSTEM OF FLOOD CONTROL.

Take the Ohio River as a whole and there is absolutely no doubt whatever that by adopting a centralized system of control of all the reservoirs in the Ohio Basin, so that a man sitting at a telephone at Cairo could control the output of every reservoir in the Ohio Basin, you could fix a level at Cairo above which the Ohio River never would go. In order to do that, of course you would have to control all the streams. You would have to control the Miami, which is being done; the Scioto, which is being done; and the Muskingum, which can no doubt be done, and the Allegheny and Monongahela. You have also got to control the Cumberland and the Tennessee, but there is no physical objection in the way at all. It is the simplest thing in the world if you just work out a general plan.

Now if you have a general plan you create a condition of safety, while without a general plan and a central control you may create exactly the opposite condition on the lower Ohio so far as the floods are concerned. Let me illustrate that. Take this storm of 1913, which, as you see here [indicating on map], veered off to the northeast after leaving Ohio. That is one of the things which, I take it, Mr. Morris Knowles referred to when he said that subsequent experience has somewhat modified the original view of the possibility of a flood 5 feet higher at Pittsburgh; now they anticipate they may have one 10 feet higher.

This storm apparently increased its precipitation wherever the higher ground in Ohio was reached over in this direction [indicating]. Then it veered off and spent itself out over Lake Erie and Lake Ontario. Now, if that storm had switched around just a little bit so that this tail end of the storm, instead of going off over a lower elevation in Ohio had veered a little to the east and struck the higher mountain country back of Pittsburgh and this 10-inch precipitation which occurred in Ohio had taken place on the headwaters of the Allegheny and Monongahela, I do not think anyone would like to contemplate what the consequences to the Ohio River would have been. Anyway, that is a possibility which you must face all the time unless you have this condition of general control of the entire river. Anything above Pittsburgh can be taken care of, and you can take care of everything below Pittsburgh on the different streams. The difficulty is this: Suppose, for instance, in 1913, starting with the lower river and going up, the first heavy flood coming into the Ohio was from the Miami. The Miami flood came out first; it came out quickly and cleared the river. Then the Scioto went down and cleared, and then the Muskingum came down and cleared.

Now suppose, instead of those floods going out quickly as they did, the floods on the tributaries of the lower river had been held back until they would come out and meet the crest of the flood coming from the upper river. What would you have had then in the lower river? In other words, there is no safety on the Ohio River except by a general plan which permits a complete centralized control of the entire reservoir system and of all the tributaries, so that a man knowing not only the conditions in the reservoirs but in the valleys above Pittsburgh and on all the tributaries will be able to control the height of the river. Then he can feed the water into the river so as never to overtax the channel and get a regulated flow at Cairo. In that way he will absolutely relieve the flood conditions at Cincinnati and on the lower river.

RESERVOIRS FOR POWER AND FLOOD CONTROL.

The use of the same site for a reservoir for power and for flood control is often very practicable and very vital, because in some of the valleys, unless you provide when the plan is first arranged that the same reservoir may be used for both purposes, you may, in building a power reservoir, destroy the utility of the site for flood control; whereas, if you have the administrative machinery, such as is provided in the Newlands river-regulation bill, you can lay out a plan in which the very utmost limit of power development can be provided for, and at the same time right in the same valley, and in the same site, provide for raising the dam 50 feet higher or 100 feet higher and making an enormous additional storage for exclusively flood purposes. The area used for power would be filled every year; the area for flood purposes would be filled only at rare intervals. The land embraced in the area used only for flood control could be used for grazing, for raising timber, and for everything except the few things that would be injured by a very rare overflow.

Take the Dayton flood, for instance. It was about 30 years ago when they had the last flood like this one of 1913 in Dayton. So once in 30 years, you might say, the temporary use of the land for a few days may save millions of dollars of flood damage that would otherwise result. All this exploitation that has been done by the opponents of reservoirs, to try and create the impression that there was an enormous amount of land going to be taken, is based on a complete lack of appreciation of the facts.

Now, I do not want to take up the time of the committee any further, but I do want to leave those three points clearly in your minds: First, as to the necessity of this general administrative machinery; second, that every stream in the Ohio Valley can be controlled so that it can be made absolutely safe from floods; third, that in order to get the benefit of that control at Cairo you have got to have a complete centralized control of the entire valley and all the tributaries of the Ohio River; and fourth, that you can use the same reservoir site for both navigation, power, and flood control, provided your plans are so made that the plans for the power dam contemplate the simultaneous use of the same site for flood control. That is the reason why it is so exceedingly unwise to go ahead and provide for granting power rights and building power dams on these streams without at the same time making provision with reference to flood control if it is necessary that the same sites should be used for both purposes, by using the lower part of the reservoir for power storage and the upper part for flood control.

THE MISSISSIPPI RIVER.

The statement of Mr. Cooley that the stage of the Mississippi River at Cairo could be increased from 100,000 to 300,000 cubic feet per second at low-water stage, and reduced from 1,800,000 at high water to a stage of about 1,250,000, which is approximately a bank-full stage, as I understand, seems to me to offer to the residents of the lower valley from Cairo down at least as far as Old River, an assurance of positive safety which no possible levee system they could build would create, for the very simple reason that, if the floods as they have accumulated at Cairo up to the present time, constantly enlarging in volume and increasing in height as the years pass, are to continue to enlarge and rise higher and higher from year to year, it seems almost impossible that any system could be devised of levees exclusively that would ever make the country from Cairo to Old River safe unless other systems of control were adopted.

It is not entirely true that the spillway safeguards could be utilized only for the benefit of the lower country. The plan of double-tracking the Mississippi has been suggested, but that evidently would involve immense expense. I think, however, that if the overflowed areas were examined it would be found that a very great element of safety could be provided by simply utilizing the present tributary flood channels and leveeing them so as to form a system of by-passes or wasteways, so that if the water did get over a certain height and go over the levee in a spillway, even as high as Cairo, it could be carried to the Gulf without necessarily going back into the river, and the danger of crevasses could in that way be avoided if the river did get above the estimated height at which the spillway had been built.

The weakness in the plan for the control of the river that has prevailed up to the present time lies in the fact that while the height of the levee may be established there is no assurance whatever that in some great flood, which may just as well come next year as a hundred years from now, the levee system will be adequate to carry away the water between the levees, and if it should prove inadequate the levees will necessarily be overtopped by the flood.

SOURCE-STREAM CONTROL.

The question of source-stream control on the upper tributaries is one that has, in its discussion, been so much misunderstood that I am going to try to lay down a few fundamental conditions and principles with reference to it which, I think, will be helpful to this committee, and to a very large extent clear up much of the apparent misunderstanding which has existed in the past. It has again and again and again been stated through the press by opponents of the reservoir system that it would be impossible to store the floods of the Mississippi River that pass Memphis. Nobody contends that it should or can be done; nobody proposes such a thing. The thought never has entered the mind of anybody who has proposed flood control or flood reduction by source-stream control.

It is the last few inches in the height of these floods, as a general proposition, that does the harm. You may take the Ohio River at Cairo as an illustration. You absolutely can not provide flood control and flood safety on the Ohio River by any plan that does not contemplate the control of all the tributaries and of the entire watershed; but there is no one single stream flowing into the Ohio River from either north or south that can not be so completely regulated in all ordinary years that it will practically flow an even volume of water throughout the year, in such years, just as the Deschutes River does in Oregon; and if the question were always segregated, and plans for regulating the flow of the river in ordinary years separated in the minds of the people considering the subject from plans for taking care of an extraordinary flood, I believe very little difficulty in handling this problem would be encountered.

A representative of the Weather Bureau at Cairo can predict to a nicety the volume of the flood that will reach Cairo after heavy rains on the watershed at any point thereon. They can predict to an exactitude what is coming to Pittsburgh; and it is the combination of high water that makes the danger, as was stated here the other day when the Pittsburgh hearing was on before the Flood Control Committee of the House of Representatives. A difference of two hours in the time the flood from the Monongahela arrived at Pittsburgh in 1907 would have made a difference of 5 feet in the height of the flood at Pittsburgh, and the flood would have gone to 40 feet instead of 35.

If this flood system were put into operation with reference to the entire river, a representative of the Weather Bureau with authority to control the entire system of reservoirs and all flood-control works on the entire watershed could absolutely fix the gage level to which any flood would be permitted to go at Cairo and could prevent it from going one single foot above that point.

UTILIZATION OF FLOOD WATERS.

Now, what is to be done to bring that about? In the first place, the utilization of the water in the ordinary year which now runs to waste in floods, for industrial and other beneficial uses, will regulate the flood to that extent, so that the river will flow evenly through the year. The development of the water-power resources of the whole mountain country, if completely carried out, will very largely solve the question of the regulation of the flow of the river in all ordinary years, because every water-power plant desires, to the utmost possible extent, to regulate the flow of the river evenly through the year during the ordinary years, but when the extraordinary floods come, like the flood of 1907 or the flood of 1913 in the Ohio Valley, the surplus water is of no value whatever to them, and the power reservoirs will all run over. They would not be built for the purpose of holding such an extraordinary flood, and they would not help you one iota in the year of extraordinary high water; in other words, you have got to first take care of the floods of the ordinary years; and then, after you have provided for that, you must, as a separate proposition, take care of the extraordinary floods.

It has been established beyond all question by experiments and demonstrations that have actually been made, that the water that falls on the State of Ohio in an ordinary year can, every drop of it, be utilized beneficially for agricultural and industrial uses, and soaked into the ground itself, first, as a natural reservoir, before it, by saturation and seepage, comes back into the streams.

Col. Freeman H. Thorpe, who was for many years a well-known resident of Ohio, and who for the last 15 years has lived in Minnesota, has made that demonstration, and his work has been referred to in a Senate document on that subject.

The committee has not the time available to make it possible at this time to go into the details of just how all of this water can be used, but that it can be used is something that no one who understands the subject for a moment questions, in all ordinary years. If you reduce the flood level of the ordinary years to an average level throughout the year, raising the low-water stage and lowering the high-water stage, then to the extent that you have reduced the high-water stage, you have created that much additional channel space for the carrying away of the unexpected flood of the extraordinary year. Without other expense, you have to a very large extent, created a margin of safety consisting of a larger available channel capacity which would not have existed in your Ohio flood of the extraordinary year if it had come on top of the flood which was running at the height at which the streams in the high-water season run to-day in Indiana and Ohio in the ordinary years.

THE EXTRAORDINARY FLOODS.

When you come to take care of the extraordinary flood, it must be done by surplus emergency-impounding basins or detention basins or impeding reservoirs used only for the purpose of holding back the flood water just so long as it is necessary to hold it before it can be turned into the channel and find in the channel the space necessary to carry it.

If you go into the valleys of the Allegheny and the Appalachian Mountains that drain into the Ohio River, you will find valley after valley, and valley after valley, where it would be inadvisable to sacrifice the possibilities of power development only for flood control; but if the system is adopted, as it can be if we have proper national legislation, that the power reservoirs would be built up to the point where in all ordinary years the stored water could be used to develop power, and above that a storage capacity created, which would be used only for flood control, you would have the valleys below entirely protected from floods. The flood water which had been stored for flood control only could be held back until the river could carry it, and then turned into the channel.

This weather bureau representative at Cairo, having control of all these flood-impounding basins, as they are now building them for the protection of Dayton and as they are proposing to build them for Columbus, and as they ought to be built on every tributary, could know to a nicety just when the water from these reservoirs could be emptied into the main river and find channel space to carry it without going a foot above the prescribed safety level at Cairo.

Before and after the Dayton flood it was stated as his opinion by Gen. Bixby that the only way to control the flood was to open the channels and shoot the water into the river just as quickly as possible. That was Gen. Bixby's belief as Chief of Engineers of the United States Army. He ridiculed the idea of controlling that flood with reservoirs as an impossibility. Since the Dayton flood they have found that by using these impounding or detention basins or impeding reservoirs they can hold that water back until the channel will carry it, and in that way avoid entirely the danger of the water getting over the channel banks. That is an entirely different proposition from the question of taking care of flood water in the ordinary years.

The year in which 8 inches of water fell was the great Ohio Valley flood of 1913. That flood could not have been taken care of on the Miami River without these impounding basins; but the basins are there, and the Dayton people have made a plan for utilizing them, and the plan will absolutely protect the Miami River from floods, because it makes it impossible that the channel shall ever be required to carry more water than the cross section of the channel makes possible.

That is the conclusion which has resulted from the actual investigations made by the engineers for the local Dayton Flood Commission, which has been examined and confirmed by a board of the most eminent engineers of the United States.

INADEQUACY OF LEVEE SYSTEM.

It is a very grave question whether levees ever can be built which will carry to the Gulf such a rainfall as that which fell in Arkansas in 1916, if the river were already high from upstream sources when this lower heavy rainfall takes place. This excessive rain of 1916 in Arkansas and Missouri can be taken care of in the river below if the volume of water in the river is not increased by water coming down from above, but if that rainfall that fell in Arkansas and Missouri in 1916 had taken place in 1913 and then the storm had gone right on over to the Ohio Valley and dropped its heaviest water farther up in the Ohio Valley; if, instead of stopping where it did in 1916, it had gone right on across Indiana and Ohio, you would have had a flood from the Ohio coming down the Mississippi which would have made it impossible for any levee system to have carried that water to the Gulf.

What I am trying to explain is the guaranty that may be afforded by source-stream control that there will never be at Cairo, coming into the Mississippi River from the upstream sources in the Ohio Valley, so high a flood that any water that may fall below Cairo can not find its way to the Gulf without overflowing the levees. The Ohio River is the greatest contributor to the floods of the Mississippi River. If the Ohio is controlled, the river can take care of floods from all other tributaries without danger of flood devastation in the lower valley. No two floods are alike. The flood of 1912, which was the most serious proposition that they ever had in the lower river, for the reason that it remained so long, came from a general heavy snowfall and rainfall over practically all the entire upper watershed and the Missouri and the Mississippi and the Ohio were all high at the same time, but none of them at excessive flood stage.

If, in 1913, the great amount of water which was coming out of the Missouri and the upper Mississippi on the exact day of 1912 on which the Dayton flood came out in 1913, had been coming out in 1913, and the Dayton flood in 1913 had struck that high water from the Missouri and the upper Mississippi, no levee system below would have held it.

The point that we make is—and whenever the whole thing is understood there is no question about the fact—I am taking a good deal of time to explain it, but there is no question about the fact—that the flood of 1913 could have been absolutely controlled at Cairo. There was no flood out of the Tennessee, or the Cumberland, or the Kentucky, or the Big Sandy, or the Kanawha, or the Little Kanawha, or the Monongahela, or the Allegheny in 1913. The flood of 1913, practically all of it, came from Indiana and Ohio and slopped over a little on the headwaters of the Beaver, in Pennsylvania, overtaxing one stream after another. The Ohio people have positively proved that they can hold back that water until the channel will carry it on the Miami. That will protect Dayton and Hamilton.

FLOOD CONTROL FOR COLUMBUS.

I have here, and I will ask to have it inserted in the record, a very brief résumé of a 400-page report by Alvord and Burdick, with reference to the watershed above Columbus, Ohio.

(The extract from the Engineering Record referred to in the statement of Mr. Maxwell is here printed in full as follows:)

[Engineering Record, Mar. 25, 1916.]

Recommend Both Reservoirs and Levees to Protect Columbus from Floods.

Alvord and Burdick in 400-page report find cost $10,125,000 for project caring for flood 45 per cent in excess of 1913.

Protection from a flood in the Scioto River 45 per cent greater than that of 1913 can best be obtained by the Franklin County conservancy district, Ohio, in which Columbus, Delaware, and Chillicothe are located, by a combination of two unusual detention basins and channel improvements, according to a 400-page typewritten report recently submitted by John W. Alvord and Charles B. Burdick, of Chicago, chief engineers for the district. The following notes are taken from the general conclusions of the report. One of the reservoirs is on the Scioto River above Dublin, and one on the Olentangy River above Delaware. The cost estimated at $10,125,000, includes the lands, a special $1,000,000 benefit to Columbus in the way of a water supply for the next 75 to 100 years, and numerous bridges and street improvements throughout the county.

FLOOD DATA CONCLUSIONS.

The size of the basins is such as to hold back, at Columbus, all water above 50,000 second-feet, the channel capacity to be provided for through the city. The maximum run-off is taken as 200,000 second-feet, 45 per cent in excess of the 1913 flood, and the point of calamity would not be reached until the discharge had reached 250,000 second-feet. Records show that the 1913 flood is double the next greatest flood of the past 100 years. Owing, however, to increased settlement and development of the valley at least six floods of record, some of which were not especially destructive, would, under present conditions, create a calamity in all probability equal to that of 1913. Flood menace, therefore, in the future is not to be measured wholly by the probability of a recurrence of the 1913 flood, but by the increasing menace of much smaller floods made dangerous by channel encroachments, combined with levees and other embankments. It is believed that in course of time the flood of March, 1913, will not only be repeated but probably exceeded, by reason of the following causes:

1. A rainfall of more than 6 inches in two days centered over the critical area below Prospect.
2. Greater rainfalls, such as are on record elsewhere, centering over the whole watershed.
3. Snow accumulations melted by warm rainfalls of high intensity and duration over the critical area.
4. Gradual elimination, through improvement, of existing natural detaining basins, which on the upper Scioto have hitherto aided in restraining excessive floods.

Taking these conclusions together it would seem the part of wisdom to provide, as a factor of safety, protective works which will prevent a calamity in a flood having at least one-half greater maximum flow than occurred in 1913. The safety of large storage basins further requires that there should be provided, as an additional factor of safety, liberal spillway capacity above this amount capable of further fully protecting the proposed dams.

ADVANTAGES OF PROJECT SELECTED.

Of the total cost approximately $2,500,000 is allowed for about 21,000 acres of detaining-basin land estimated as purchased outright. Inasmuch as practically all of this land may be continuously cultivated it will retain its agricultural value. Its cost should not be treated as entirely a burden to the taxpayers. Deducting the value of land which would be able to pay its own way, the value of water-storage capacity to Columbus, the cost of rebuilding certain structures which should be financed by the city and county, leaves about $6,000,000 as the cost of flood protection. Based on percentage of losses suffered during the 1913 flood Chillicothe should pay 9.5 per cent; the 41,370 acres of farm lands, 10.1 per cent; Columbus, 54.7 per cent; Delaware, 3.7 per cent; the county, 6.3 per cent; the railways, 15.4 per cent; and the villages, 0.3 per cent. Water power can not be profitably developed.

BASINS ARE LARGE.

The project requires, on the Scioto River, a very large detaining basin, which will be formed by an earthen dam across the narrow valley above Dublin. The greatest height of the dam will be 143 feet and its thickness at the base 980 feet. It will hold at spillway level 255,925 acre-feet of water, and flood 9,580 acres.

There will be conduits formed by tunnels in the solid limestone rock of the adjacent hillside. These conduits will be so arranged as to serve for both flood protection and water-supply storage.

The project also requires a large detaining basin on the Olentangy River, about 2 miles above Delaware. This will be formed by an earthen dam 82 feet in greatest height, and 850 feet thick at the base. It will hold at spillway level 163,202 acre-feet, and will flood 11,299 acres of land.

Two conduits tunneled in shale rock in the adjacent hillside at the river level will permit the ordinary flow to pass through the bottom of the dam.

Every precaution will be taken to provide for the safety of these dams. They will be founded on rocks, will be made of extra thickness, and will have ample spillways. Before they could be overtopped a flood more than three times as great as that of 1913 would have to occur. Put in another way, the spillway outlets will alone pass two and three-fourths times as much water as the maximum flow in the 1913 flood.

BALANCING CHANNEL AND RESERVOIR COSTS.

It is evident that, other things being equal, the project is the best which safely passes a given flood with the least cost. Each project for reservoirs produces a different reduced flow, and, as in all these projects expenditures for channel improvements are necessary, the least cost is determined by adding to the cost of each reservoir project the cost of the channel improvements that would be required along with it. The curve marked total cost, shown herewith, represents the sum of each reservoir project with its corresponding channel improvements. It indicates very clearly that project D, costing $8,210,712 for basins and $1,914,400 for channel improvements, a total of $10,125,112, is the most economical combination for accommodating a 200,000 second-feet flood. This contemplates a channel improvement to accommodate about 50,000 second-feet.

UPPER MISSISSIPPI AND MISSOURI RIVERS.

When you pass to the Mississippi River and consider the question of storage for electrical power purposes and the building of flood-control reservoirs like those that are built at the headwaters of the Mississippi, the practicability of flood control of the Mississippi is established by records and surveys and figures which are in the reports of the Army engineers. You do not have to go outside of those reports for them. When you come to the Missouri, you can go out into Kansas and Nebraska and into the arid regions of the West and the whole country is a great natural sponge, absorbing the water, and what you need is to get the flood out in great wide flood canals, so that it can be spread over the country and soaked into the ground and impounded in basins on the prairies. You can take out a great flood-water canal at Great Falls, and others below at proper intervals, and the whole flood of the Missouri River above Omaha can be absolutely taken care of and controlled.

I want to just bring this one thought to your minds as to this question of the absorption of the flood water into the earth sponge. The Ohio River, for instance, drains a basin of 205,000 square miles. The distance from Pittsburgh to Cairo is something less than a thousand miles. If 12 inches of run-off—that is about the average run-off—should simultaneously run off from the entire Ohio River drainage basin and pile up in the Ohio River it would make a body of water a thousand miles long, a mile wide, and 200 feet deep. Just think of it. That is only 12 inches of run-off. In the Ohio River basin a great deal of the run-off can be absorbed into the earth by proper methods. In the arid regions all of it could be absolutely cut off, so there you have a different proposition entirely. The floods of the Missouri could be controlled so that the river would flow just as regularly at Omaha as you would run water out of a pipe. There is not any question of it. When you come to the floods lower down the Missouri you have a more difficult problem, but they can be controlled.

FLOOD PROTECTION IN THE MISSOURI VALLEY.

In the Missouri River Valley irrigation will hold back the floods because it will store the water by pouring it into the greatest of natural reservoirs, the earth. In that way national irrigation can be made to prevent the floods of the Missouri River, whenever a large enough area has been reclaimed and settled up in small farms. The irrigated farm should not be over 40 acres in extent. Then it will be properly cultivated and irrigated. There is no run-off with silt to do damage if the irrigation is properly done. The land to be irrigated must first be leveled. Then it must be checked. The checks hold the water until it has all soaked into the ground if it is properly planted to a meadow of alfalfa. If it is cultivated to grain, or cultivated to any cereal crop, or if it is plowed and left fallow, and the irrigation is properly done, the land will still absorb all the water that is run into the check. If you put water enough on so that there is a run-off of silt-carrying water you are overirrigating that land. You know what a check is. It is the level part of the field where the little ridge runs around it, where you put the water in, whatever you use for irrigation, and it is held by the check until it soaks into the land. The purpose of the check is to hold the water until the earth absorbs it and to prevent erosion. Every check is not only a check for the water that soaks into the land, but every check upon an irrigated field all over the whole West is a check upon the allowing of silt to run into the river to impair navigation or silt up the channel from that source.

There are many influences that irrigation will exert upon the navigability of the streams from which the water is taken for irrigation. It will regulate the stream, it will prevent the torrential floods, it will prevent the erosion or wash of the soil, it will prevent the silt from running off into the rivers, and it is the only way in which enough water can be stored back in the season of high water to control the devastating floods that are now coming down the Missouri River, carrying death and destruction to the farms and plantations below, silting up the channel and eventually destroying navigation.

THE IRRIGATED LANDS ARE A RESERVOIR.

There is no human possibility that the floods of the Mississippi River, from its junction with the Missouri and the Ohio to the Gulf, can ever be adequately controlled, or that a permanent channel for navigation can be perpetually maintained along the lower reaches of the river, unless the great problem of controlling the water over that whole drainage basin is grappled with as one single problem. Every available influence must be brought to bear in every part of the basin to check the sudden run-off and restore the natural forest reservoirs. The flow must be regulated by building artificial reservoirs and by utilizing as storage reservoirs the earth itself, wherever it is possible by irrigation to saturate it with water, when the streams and rivers are running full in the season of high water.

You may gain some conception of the relative importance of irrigation to flood protection and navigation if you will bear this one fact in mind:

Two acre-feet of water is water 2 feet deep over 1 acre of land. That is about the average amount of water used annually for irrigation. If you build the necessary diversion dams and canals and electric-power plants and pumps to irrigate 10,000,000 acres of land with 2 acre-feet of water in the Missouri River Valley you would use 20,000,000 acre-feet of water in a year. It would be taken from the natural channel and diverted into the canals when the water is most plentiful in the stream or river. Twenty million acre-feet of water would cover 31,250 square miles of land 1 foot deep with water. In other words, it would be water enough to create a flood 3 miles wide and 10 feet deep through a river valley more than a thousand miles long—practically the length of the Mississippi River Valley from New Orleans to St. Louis.

The total area that can be irrigated in the valley of the Missouri River is very much greater than 10,000,000 acres. There are, no doubt, 10,000,000 acres of land in Montana alone that can eventually be irrigated, and practically all of it is in the Missouri River drainage basin. When you add to this the area irrigable in North and South Dakota, Wyoming, Colorado, Kansas, and Nebraska, some conception of the stupendous possibilities of water control from irrigation may be gained.

THE MISSISSIPPI RIVER.

As to the Mississippi River, if the appropriation of $45,000,000 authorized by the House flood-control bill were for the improvement of the navigability of the Mississippi River as the Nation's waterway it would present a very different question from that presented by an appropriation intended primarily to protect railroads from floods and to protect private lands from overflow in order to increase their productivity and value.

The improvement of the value of those lands is primarily for the benefit of their owners. The benefit to the people at large is only incidental.

The improvement of the navigability of the Mississippi River is primarily for the benefit of the entire people of the United States, and the fact that such improvements may incidentally benefit private property is no reason why they should not be made.

All river and harbor improvements, when fully warranted and made because of legitimate public needs, incidentally and necessarily benefit private property.

The time will come when the Mississippi River will again be a great highway of water-borne commerce. Before it can become such, terminal and transfer facilities must be provided, rail and water routes and rates must be coordinated, and good roads, which now reach railroad terminals, must also be built to reach river terminals.

All this will be done. The Newlands river-regulation bill provides not only for the maintenance and preservation of the waterway but also for the cooperation of the National Government in solving the problem of terminals and transfer facilities and the coordination of rail and water transportation under the system now so successfully in operation on many European rivers.

To promote that ultimate ideal and to improve the navigability of the Mississippi River, stop the caving banks, prevent the silt from forming "mud lumps," and filling up the channels to the sea through the jetties, and to supplement this bank protection by levees where they can be built close to the bank of the river, so as to hold the river in its channel in times of floods, is undoubtedly a justifiable and well-established national policy.

The evidence is by no means clear that levees, under any circumstances, are a benefit to navigability, and it would seem to be established by the opinions of unprejudiced engineers that the levees, where built far back from the river, as they are now being built from Cairo to Old River, are gradually destroying the navigability of the river.

Lyman E. Cooley testified substantially to the effect that the original theory that confining the river between levees would cause it to scour a deeper channel had not been borne out by experience, and that when the levees are built a considerable distance back from the banks of the river, that the river, instead of scouring the bottom and thereby deepening the channel, erodes the banks and causes cavings on so large a scale that the navigability of the river is seriously impaired.

Mr. Cooley declared that the first and most important thing to be done to improve the navigability is to revet the banks and stop the caving.

INJURIOUS EFFECTS OF LEVEES.

This opinion is borne out by the statement of Capt. C. O. Sherrill, of the Corps of Engineers, United States Army, who says:

> An injurious effect of the extension of levee lines on the channel is that by restricting the flow to a small sectional area, higher flood heights are caused, and more extensive caving of the banks occur.

This subject of caving banks is exhaustively treated on pages 40 to 48 of House Document No. 50, Sixty-first Congress, first session, entitled:

> Report by a special board of engineers on survey of Mississippi River from St. Louis, Mo., to its mouth, with a view to obtaining a channel 14 deep and of suitable width, including a consideration of the survey of a proposed waterway from Chicago, Ill., to St. Louis, Mo., heretofore reported upon. Submitted by the Chief of Engineers to the Secretary of War.

In this report, opposite page 48, is a diagram, entitled:

> Caving banks from Cairo to Donaldsonville, 1877-1883 to 1892, showing graphically the annual volume of caving per mile of river, considered in sections of 10 miles.

And on page 46 the conclusion is given that the total cavings average annually 43,810 square yards, or 9½ acres, with an average depth of 66 feet, for every mile of the river from Cairo to Donaldsonville.

MATERIAL FROM CAVING BANKS.

On page 47 further statistical facts are given, from which the following conclusion is stated:

> By the above showing, the amount of material originating from caving banks which the Mississippi River, between St. Louis and permanently deep water in the river below Donaldsonville must carry along and dispose of every year, amounts to more than one and one-fourth billion cubic yards. This is over twenty times as much as is carried annually by the Danube, Dneiper, Volga, Rhone, Nile, Hooghly, or La Plata, and over fifty times as much as by the Loire and Durance, although these foreign rivers are considered specially difficult of improvement because of their silt and water-borne material.
>
> This one and a quarter billion cubic yards of material coming every year into the river from caving banks along the Mississippi and lower Missouri Rivers is equivalent to a volume 1 mile square and almost 1,200 feet high, and this amount must necessarily be picked up by the water currents of the Mississippi below the mouth of the Missouri and carried down the river until it is deposited by some freshet at other places above low-water level or reaches the Gulf of Mexico.

Is it any wonder that there are bars in the channel of the Mississippi or mud lumps in the jetties or that the jetties have to be constantly extended farther and farther into the Gulf?

Is it not clear that every year this bank caving is allowed to continue contributes to the eventual destruction of the navigability of the river?

In the report last quoted from, on page 48, we find the following:

> Until the caving of banks can be stopped in the Mississippi River below St. Louis, either entirely or to a large extent, it is practically hopeless to expect any improvement of low-water conditions in the open river.

NAVIGABILITY TO BE SACRIFICED.

Do not these conditions squarely present this question: Can the navigability of the Mississippi River be permanently sacrificed to a plan for flood protection that contemplates raising the levees higher and higher, and thereby holding the water up over the adjacent land between the levees that much longer, and increasing the dynamic force of the river, which, when so confined expends its increased dynamic force in eroding and caving the banks? The tendency to erosion and caving seems clearly to be enhanced by the saturation of the land by the flood water that is held over it for long periods by the widely separated levees.

Manifestly these disastrous results to navigation can only be obviated by an immediate adoption of a policy that will, with all possible expedition, provide for bank revetment and for simultaneously and systematically lowering the flood levels as rapidly as possible, by source stream control on the upper tributaries and a system of wasteweirs and wasteways, or controlled outlets, in the lower reaches of the river.

It has been contended that the work of revetment can not be carried forward rapidly, but the contrary is held to be the fact by Capt. Charles H. West, of the Mississippi River Commission.

STATEMENT OF CAPT. CHARLES H. WEST.

In his testimony before the Senate Committee on Commerce, Sixty-second Congress, second session, on April 12, 1912, Capt. Charles H. West testified (p. 3) as follows:

I have been engaged in work on the Mississippi River for 25 years either as engineer with the Government or as chief engineer of the Mississippi levee district and have been a member of the Mississippi River Commission for a little over two years.

From page 9 of this same pamphlet I quote the following:

Senator NEWLANDS. Is revetment necessary?

Capt. WEST. Absolutely so, both for the control of the low-water channel and for the maintenance of the levees. In fact, if you to-day had a complete levee system it would be difficult to maintain it without reveting the banks to prevent them from caving into the river. Along the front of the lower Yazoo levee district there has been 90 per cent of the total length of the levee line abandoned by reason of caving banks since 1882. For this reason, important as it is to strengthen the levees, it is absolutely imperative that the revetment work be continued. If there is to be any improvement in navigation and any additional protection afforded, it is absolutely necessary that there should be a complete revetment system and levee system. One is the complement of the other.

LEVEES INADEQUATE WITHOUT REVETMENTS.

And in his testimony on another occasion at the same session of Congress, in pamphlet entitled, "Mississippi River Levees," on pages 26–27, Capt. West testified:

I am going to be perfectly candid and make a statement that may not be pleasing to the people of that lower valley or the members of this committee, but I do not believe that you can ever complete the levee system of the lower Mississippi until you have given fixation to the banks of the river.

I will go further and say that if you by some process of magic had to-day on the banks of the Mississippi River a levee system that was up to the ultimate height and volume that we estimate it should be, you could not maintain that system against disaster until you have prevented the caving of these banks.

I want this committee to realize that some of us at least do not believe that any amount of money spent in building levee embankments on the banks of the river will ever complete the levee system without revetments. I am speaking of the foundation principle, because it seems to be overshadowed, and would be a great mistake to neglect it.

RAPID REVETMENT IS PRACTICABLE.

The total length of the levees on both sides of the Mississippi River is about 1,600 miles, and there are over 700 miles of caving banks which must be revetted. There are some who sincerely believe that the revetment of this long line of caving banks is impracticable because of its great cost and the impossibility of securing a sufficient amount of willows to do the necessary work.

On this point the following appears on page 10 of the pamphlet containing the testimony of Capt. West, on April 22, 1912, before the Committee on Commerce of the United States Senate at the Sixty-second Congress, second session, quoted from above:

Senator NEWLANDS. I have heard that a greater expenditure for revetment work might not be possible because of there not being a sufficient supply of willows for constructing the subaqueous mattresses.

Capt. WEST. I am glad you mentioned that. I have heard that some such opinion was in the minds of some of the members of the River and Harbor Committee of the House. I think this something of a fallacy. There is now an abundant supply of willows, and they grow rapidly and with a little care in the way of propagation and conservation the supply can be made practically inexhaustible.

Manifestly, therefore, in the right order of precedence, revetment of the banks should have priority over all other work.

It is equally manifest that in the House flood control bill not revetments but levees are given precedence in relative importance over all other work.

That fact was strongly emphasized by those who came before the House Flood Control Committee in its earlier hearings urging flood control by levee building.

RELATION OF LEVEES TO NAVIGATION.

The whole theory as to the relation of levees to navigation seems to have been evolved from the supposed necessity for justifying levee construction at Government expense on the ground that the levees benefited navigation rather than on the real ground for which they were built, to wit, the protection of lands and railroads from overflow.

This point is very vigorously urged in an article entitled "The Problem of the Mississippi River," published as Senate Document No. 486, Sixty-third Congress, second session, from which the following is quoted:

> So far has the commission—Mississippi River Commission—departed from the original, sincerely planned effort to aid navigation "by confining the flood waters so as to deepen and scour out the channel" that this theory is generally recognized as the merest pretext and subterfuge under which the work of reclaiming the alluvial basins is being carried on. The truth is shown in the report of the commission for 1912, at page 3724:
>
> "While the levees have a certain degree of utility in the improvement of the channel and are necessary to 'promote the interests of commerce' by providing landing places for the interchange of traffic in times of flood and protecting the lines of railway behind them, their immediate and main value is the protection of the alluvial lands for the benefit of their owners."

(The quotation marks are inserted by the commission.)

> No clearer admission is possible that the commission has abandoned its original plan.

Senate Document No. 486, Sixty-third Congress, second session, from which the above is quoted, is replete with valuable references to the authorities on this subject, and is printed in full on pages 8644 to 8646 of the Congressional Record for May 8, 1916.

Accepting the foregoing statement of the Mississippi River Commisson as to the real purpose served by the levees and placing it beside the statements in behalf of the levee system given at the recent hearings before the Flood Control Committee of the House of Representatives, it certainly must be accepted as a fact that further appropriations for levee work on the Mississippi River will be made not to improve navigation, but to improve levees which are built to protect "the lines of railway behind them" and "the alluvial lands for the benefit of their owners," to quote again the language of the Mississippi River Commission.

That being so, any preference that the Mississippi River might, in behalf of a national waterway, claim over other sections for large immediate appropriations for flood relief must be laid aside, because the railways and landowners in the Mississippi Valley have no right to be preferred over flood sufferers or the people of flood-menaced valleys in any other part of the United States in the matter of flood protection.

NEEDS OF OTHER LOCALITIES IGNORED.

The people living on the Savannah, the Brazos, the Colorado, the San Gabriel, the Missouri, the Arkansas, the Wabash, the Allegheny, the Monongahela, or on any of the tributaries of the Mississippi River, from whence come the great floods of the lower Mississippi River, are just as much entitled to immediate relief as the people of the lower Mississippi Valley, who ask for protective legislation against the floods after they get down into the lower valley, where floods have prevailed from time immemorial.

The Ohio Valley is as much entitled to immediate relief on a large scale as the lower Mississippi Valley.

Why should Memphis ask relief in advance of Pittsburgh or Cincinnati?

Why should the Arkansas, the Illinois, the Savannah, the Colorado, the Brazos, and all the other flood rivers be entirely ignored?

The House flood-control bill, while appropriating $45,000,000 for the Mississippi and $5,600,000 for the Sacramento, appropriates not a cent, not even for a survey or an investigation on any other river in the United States.

It is contended that the Sacramento and the lower Mississippi are the only rivers where completed projects exist for the construction of which Congress may therefore appropriate.

COST WILL BE $228,000,000.

It is difficult to see how this can be urged with reference to the Mississippi. The estimates of the Mississippi River Commission for completing either the levee system or the revetment system, taking either of them separately, go far beyond the sum of $45,000,000, which has been authorized to be appropriated by the House flood-control bill on the plea that it will complete the levee system. Capt. West, himself a member of the Mississippi River Commission, says that instead of $45,000,000 it will require at least $228,000,000 for a complete revetment system and a complete levee system.

At the same hearing above referred to before the Rivers and Harbors Committee, Mr. Davidson, a member of that committee, asked Capt. West the following question:

> So that when the Government has started with a proposition of $48,000,000 they have only made a scratch on the surface of this levee system, have they not?

Capt. West replied:

> Well, I think those figures—$228,000,000—are about as well as I can give them. (Rept. Rivers and Harbors Com., 1912, p. 32.)

If the question were whether an expenditure of $228,000,000 were warranted to save the Mississippi River from gradual destruction as a great national waterway, the answer would have to be an unqualified "Yes"; but that is not what is now proposed.

LEVEES DETRIMENTAL TO NAVIGATION.

It is proposed that the Nation shall spend $6,000,000 a year for five years for repairing and raising the height of levees, which must inevitably be detrimental to navigation by increasing caving. For a number of reasons this proposed increase of levee heights is of doubtful value even for flood protection. Among those reasons are the increased danger from greater hydrostatic pressure on defective foundations and the consequent increased danger in the event of a break in the levees caused by the higher flood levels.

On these points the Mississippi River Commission has said:

> Defective foundations may exist far below the base of the levee in strata of sand through which the water percolates, and when the head of water in the river becomes sufficiently great a break through the surface soil occurs and the result is a sand boil which may cause the levee to collapse with little or no warning.

Of course, no one would question the fact that the higher the water is raised between the levees the greater the hydrostatic pressure and the greater the danger from such failures of foundation as those referred to in the above quotation, which is from page 2732 of the report of the Mississippi River Commission for 1912.

AN UNJUSTIFIABLE EXPENDITURE.

Under these circumstances, why should the United States Government be asked to contribute three-fourths or even two-thirds of the cost of raising the levees?

Taking the facts as stated by the Mississippi River Commission, such a Government expenditure can not be justified as being for the benefit of navigation, and its value for flood protection must be, to say the least, gravely doubtful. There is certainly no such thing as a "complete project" that can be built for this proposed appropriation of $45,000,000.

Neither does there seem to be any basis for the arbitrary division of the cost between the Government and the local interests in the proportion of one-fourth or one-third to the lands benefited and three-fourths or two-thirds to the Government.

If the levees are not for the benefit of navigation, but are for the benefit of private landowners and railways, then why should the people of the entire country bear three-fourths or two-thirds of the cost? No reason is apparent for this arbitrary and inflexible apportionment.

In the case of the Sacramento River project it is proposed that the State and the landowners shall pay one-half of the entire cost of channel improvement and an elaborate system of waste weirs, and all of the cost of an extensive by-pass system. Why should not the landowners on the Mississippi River, who cling so stubbornly to the levee system, bear at least as large a proportion of its cost as is proposed on the Sacramento River?

On the Sacramento River the landowners pay for the entire cost of the levees. They build the levees themselves. The Government is not asked to contribute at all to their construction. And they are built on the banks of the river by hydraulic dredges, and their construction both dredges the channel and holds the river in its channel when at flood, as is not done on the Mississippi River.

Why should the National Government pay three-fourths or two-thirds of the cost of levees on the Mississippi River, when they are built so far from the bank of the river that they can have no other effect upon the navigability of the river than an injurious effect?

Would not a much more just and reasonable arrangement be for the Government to bear all the cost of the revetment of the banks, and push that work to completion with all possible expedition, in view of the enormous damage to the navigability of the river resulting every year from the caving banks, which extend even to the jetties?

The estimate of the Mississippi River Commission is that the entire river could be protected from caving banks by revetments for $158,000,000. The supreme and mandatory importance and necessity for revetments is strongly and clearly stated in the communication by Maj. T. G. Dabney, chief engineer of the upper Yazoo levee district, to the House Rivers and Harbors Committee, which is printed as Appendix A at the end of the hearing on H. R. 1749, December 3 and 4, 1913, and reprinted in full in this report on pages —— to ——.

In that communication Maj. Dabney says:

> The history of levee building along the Mississippi River during the past 30 years, and, indeed, for a much longer period, has mainly been a record of restoring the continuity of levee lines that have been repeatedly and regularly breached by the encroachment of caving banks. * * *.
>
> Thus the caving banks furnish the material by which the river obstructs its own flow, which process is repeated every year in every bend between Cairo and the mouth of Red River, enormous quantities of earth being continually eroded from the banks and straightway dropped into the river channel to obstruct the flood flow and place shoals in the track of navigation.
>
> Stop the caving and this supply is cut off, and the current surging along the channel with flood energy and no load to carry, or one of negligible proportions, must inevitably exert this energy in removing obstructions to its passage, with the further effect of so increasing the discharge capacity of the channel as to materially reduce the elevation of flood planes, and so contribute directly to the increased efficiency of the levees. An important element in producing this effect of a greatly improved channel both for flood discharge and for navigation is the fixation of the line of flood flow resulting from a permanently fixed shore line by which the flood energy is to be perpetually exerted along one path of flood flow, instead of as at present continually shifting its position from hour to hour and day to day while caving activity is going on.
>
> The beneficial results of stable river banks in improving the navigable capacity of the river must be obvious to studious minds and can not be further enlarged upon here, but the salient features of the problem of Mississippi River improvement, from the writer's standpoint, may be summarized in a few words, to wit:
>
> There is a sufficient volume of water passing down the channel of the river during the period of its minimum flow to afford a navigable depth of about 25 feet from Cairo down if properly handled.
>
> The first, and absolutely essential, factor in the problem is to give permanence to the shore lines, and consequently to the line of flood flow in the channel.
>
> It has been abundantly demonstrated by the operations of the Mississippi River Commission during the past years that the caving of the river banks can be effectually stopped by the application of revetment of willow mattresses at a known cost.
>
> This having been accomplished, little else shall be required, except some inconsiderable auxiliary work for contracting wide places in the low-water channel.
>
> The effect of giving stability to the caving banks involves also a vital adjunct to navigation, which can here be only alluded to briefly. It is that facilities shall be afforded for the erection of permanent freight-handling devices along the river where none now exist, nor can exist on shifting banks, and the want of which is a fatal handicap upon any large development of navigation on the lower Mississippi River.

A LAKES-TO-THE-GULF WATERWAY.

The statement of Lyman E. Cooley bears out the belief that a complete revetment system, supplemented by a bank-levee system, built really and in fact to improve navigation, would create conditions under which the river would then scour for itself a deeper channel that would carry more flood water, and the dream of a great national all-the-year-round waterway, with an ample continuous depth of water from the Lakes to the Gulf, would become a reality.

The people of the United States can better afford to spend $228,000,000, and as much more as may be necessary, to perfect a bank-levee system, in addition to complete bank protection by revetments, than it can afford to spend $45,000,000 on plans of doubtful value for flood protection and of certain detriment to navigation.

The statement of Lyman E. Cooley and facts brought to the attention of the committee by others at the various hearings on this subject should satisfy any reasonable and unprejudiced mind that the flood levels can be lowered materially at Cairo by source-stream control, and that on the lower reaches of the river, certainly from Old River to the Gulf, the flood levels can be materially lowered by a system of spillways or waste weirs and controlled outlets, such as has been approved by the Army engineers on the Sacramento River.

That being so, the formulation of comprehensive plans for source-stream control on the watersheds of all the upper tributaries of the lower Mississippi should be pushed with all practicable expedition.

The House flood-control bill makes no appropriation whatever even for the study or investigation of such plans. It is difficult to understand why there should be such haste to protect against the floods after their formation and no effort made to control them on the upper tributaries before their formation.

SOURCE-STREAM CONTROL—THE OHIO WATERSHED.

The Ohio River, in the majority of the floods of the lower Mississippi River, appears to be the chief source of danger.

In House Document No. 141, Fifty-fifth Congress, second session, entitled "Preliminary Examination of Reservoir Sites in Wyoming and Colorado," Capt. (now Gen.) Chittenden, of the Corps of Engineers, United States Army, devotes a chapter to a consideration of "The floods of the Mississippi and the Missouri," wherein he says, on page 48:

> The great controlling element, in fact, in all the lower river floods is the Ohio River. * * * No single flood from any one of these tributaries, except the Ohio, can produce serious consequences in the main river.

Gen. Chittenden then analyzes the problem of the storage of the excess flood water on the Ohio River watershed, and gives the following as his conclusion:

> It is probable, however, that in all the watershed of the Mississippi sites could be found that would insure a reduction of a flood discharge at Cairo like that of 1897 by one-fifth of its maximum.

FLOOD REDUCTION ONE-FIFTH.

It should be noted at this point that a reduction of such floods by one-fifth of their maximum means a lowering of the crest of the flood to a level that would mean safety in place of danger and would have saved practically all of the devastation that has been caused by the great floods in the lower Mississippi Valley in the past.

Gen. Chittenden continues:

The ease with which the writer was able to find storage amounting to 11,000,000,000 cubic feet in the State of Ohio at the very headwaters of streams along the divide between Lake Erie and the Ohio convinced him that the natural facilities for storage are rather greater than is commonly supposed.

He cited "Report on Ohio Canal Survey in 1895," House Document No. 278, Fifty-fourth Congress, first session, page 56, printed also in Annual Report of the Chief of Engineers for 1896, part 5 page 2973, et seq.

RESERVOIRS ARE PRACTICABLE.

The conclusions of Gen. Chittenden with reference to reservoir sites on the Ohio River have been more than confirmed by actual surveys made since the date of his report, particularly the surveys of the Pittsburgh Flood Commission and of the Dayton Flood Commission and of the engineers employed to report on comprehensive plans for flood protection for Columbus, Ohio.

Every year's delay in formulating and pushing to completion a comprehensive plan for the control of the floods of the Ohio River perpetuates just that much longer the danger of the appalling disaster that would result in the lower Mississippi River Valley from a combination of a great flood from the Ohio with a great flood from either of the other large upper tributaries of the lower Mississippi.

OHIO RIVER CAN BE CONTROLLED.

That the Ohio can be controlled and its maximum flood level brought below the danger line all along the main river from Pittsburgh to Cairo seems to be made clear by the facts established by the foregoing reports and the other facts brought out at the hearings before the Flood Control Committee.

To determine the extent to which reservoiring would control the floods and increase the low-water flow of the Mississippi and its tributaries and the other great flood streams of the country, there is already available a very large proportion of the data needed, if not indeed a sufficient amount at this time. Additional surveys should be made to enable an absolutely complete determination of the reservoiring possibilities of every main tributary of the Mississippi, but no new and complete survey would be required in the case of any river, while in some drainage basins sufficient work has already been done by the Government and maps and stream-flow records published to enable an immediate analysis of their storage possibilities.

REQUIRED DATA NOW AVAILABLE.

A commission of engineers could take the maps already published by the Geological Survey and with the other official data at hand, but without further field work, determine at this time to just what extent the building of reservoirs in the Ohio River Basin would affect the floods of the river.

The Ohio Basin embraces about 203,900 square miles. Of this 146,700 square miles are already completely mapped by the Geological Survey, including all the State of Ohio, all of West Virginia, and very large areas in Pennsylvania, Kentucky, and Tennessee and the other States within the basin. Of the remaining 77,200 square miles in the Ohio Basin a complete topographic survey would not be required for river study. A conservative engineering estimate is that a detailed topographic river survey of 30,000 square miles in the Ohio River Basin would complete a base for a finished reservoir study of the Ohio River and all its tributaries. On the basis of the cost of recent topographic surveys in Ohio this could be done at an average of $20 a square mile, or $600,000.

TOPOGRAPHIC MAPS AND STREAM FLOW.

This topographic data for the Ohio River Basin, in connection with the precipitation data and the run-off data already available, would enable a quantitative study of storage possibilities and its effect on run-off, and therefore on flood and low-water flows of all the tributaries of the Ohio River and of the Ohio itself. Such a study is warranted for the Ohio, considered by itself, and is absolutely demanded in considering the full relation of the Ohio to the Mississippi.

Much the same condition prevails with reference to the other rivers of the Mississippi Basin. With the topographic map of the Geological Survey before him, the engineer can determine all the possible reservoir sites and their capacity for storage, while the stream-flow data of the same Government service furnishes him a good approximation of the amount of water to be stored. Nearly one-half of the United States has already been covered by these topographic surveys, while stream-flow records are available for all the important tributaries of the Mississippi.

THE UPPER MISSISSIPPI WATERSHED.

Turning to the problem of the control of the upper Mississippi, there seems to be no doubt that it can be controlled even more easily and completely than the Ohio.

In the Chittenden report on reservoirs above referred to will be found a description of the great system of reservoirs already built by the United States Government on the headwaters of the Mississippi River, of which Gen. Chittenden, on page 37, says:

> The largest artificial reservoir system ever yet constructed is that at the headwaters of the Mississippi River. * * * Up to the present date there have been constructed five reservoirs, with an aggregate capacity of 93,400,000,C00 cubic feet, at a total cost of $678,302.25.

A report on the subject of reservoirs for river regulation on the upper Mississippi River will be found on pages 112 and following of the report of the survey for the proposed Lakes-to-the-Gulf waterway, House Document No. 50, Sixty-first Congress, first session, hereinbefore referred to.

RESERVOIR POSSIBILITIES ON THE MISSISSIPPI.

The report is entitled "Report on the reservoir possibilities of the sources of the Mississippi, Minnesota, St. Croix, Chippewa, Wisconsin, and other tributaries of the upper Mississippi River, with reference to the improvement of navigation of those tributaries and of the Mississippi itself, being an extract from report of Asst. Engineer C. W. Durham, United States Engineer Office, Rock Island, Ill."

In this report the author says:

> It is the writer's belief, however, that these reservoir systems, carried out to their fullest extent, can be made to subserve both the interests of navigation and of water power, besides acting as a potent restraint on floods. * * * The examinations and surveys that have been made, and the additional claims presented in this report, perhaps on somewhat insufficient grounds, do not represent the total possibilities; in fact it is manifest that far greater storage facilities could be shown to be available.

It is interesting to note that in the same volume of House Document, No. 38, in which the Chittenden report is bound, there is another report, House Document No. 134, Fifty-fifth Congress, second session, entitled "Survey of Big Stone Lake and Lake Traverse, Minn., with a view to the construction of reservoirs." The estimated capacity of the reservoirs was 7,366,710,000 cubic feet, to cost $745,965.

When so much work has already been done by the Government to make surveys and investigations of isolated projects, what possible justification can there be for a failure to immediately provide for the complete bringing together of all these disconnected data and information, now contained in innumerable surveys and reports, so that it may be assembled and unified into one comprehensive plan for source-stream control of floods on the upper Mississippi, both in its relation to navigation and flood prevention on the upper Mississippi and on the lower Mississippi.

THE MISSOURI RIVER WATERSHED.

The problem of flood control on the watershed of the Missouri River, as shown in the Chittenden report on reservoirs, previously referred to, has a double aspect.

First, the control of the floods that come from the melting snows of the Rocky Mountains, known as "the June rise;" and

Second, the control of the floods formed from heavy rains in the humid territory drained by the lower Mississippi, which lies east of the ninety-seventh meridian of longitude and in the humid region.

The physical conditions in the arid and semiarid region lying west of the ninety-seventh meridian are radically different from those in the territory lying east of that north and south line of division between the arid West and the humid East.

In the western half of the United States the paramount use for water is for irrigation, and to that paramount use the use for navigation must be subordinated.

INJUSTICE TO THE WEST.

The United States reclamation act, by its terms, was limited to the West in its operations. In that country the Geological Survey, the Reclamation Service, and the Forest Service are the three great Government agencies dealing with flood control. The Army Engineers and the War Department have comparatively little connection with the subject. It would be unwise, impracticable, and unjust to the West to undertake, as the flood-control bill passed by the House proposes, to force everything relating to flood control under the old system for river and harbor improvements. It would practically, with the exception of a very few isolated instances, make it impossible to successfully carry out comprehensive plans for flood control, because the necessary cost of the works can not be justified either on the basis of flood control or of navigation alone.

PRACTICABILITY OF RESERVOIRS.

This fact is clearly brought out in the Chittenden report on reservoirs, where the author, on page 50, speaking of the Missouri River, says:

> That a complete system of reservoirs in the mountains and plains portions of the watershed of this stream, which should embrace its many tributaries and contain the waters from melting snows and spring rains, would materially reduce the magnitude of the June rise is highly probable. To take off the flood excesses at Sioux City, mentioned by Mr. Seddon in the first section of his memoirs, would require a storage of, say, 48,400,000,000 cubic feet, corresponding to a reduction in stage of 2.8 feet. A storage of 100,000,000,000 would probably give the very material reduction of 6 feet. Allowing a reservoir efficiency of only 50 per cent, as elsewhere explained, and assuming that no one of the great floods of the Missouri has its origin in more than one-half of its watershed, it would seem that a reservoir system of 400,000,000,000 cubic feet, distributed over the watershed above Sioux City, would quite effectually control the floods of the river. This amount of storage is about the percentage of total flow required to be stored for irrigation, as hereafter explained, in order that the water of the arid region may be fully utilized. It must be understood that such a result can be predicted only from a system of reservoirs. The effect of any single reservoir would certainly be insignificant, but the combined influence of many might be very important.
>
> Passing now to the question whether the benefits to the lower river from such a system would be of sufficient importance to justify the construction of reservoirs solely for the purpose of securing them, the answer must be distinctly in the negative. It is still true, in this case, as in those already considered, that the benefit is not worth the cost. If, however, there are other and primary considerations which of themselves would justify the construction of reservoirs, then their influence upon the floods of the lower river is a matter worthy of consideration; and when such primary interests are of a magnitude which looks to a comprehensive system throughout the watershed of the stream, subserving interests of a public as well as a private nature, then the argument for Government assistance in such works stands upon a substantial basis. The point to be especially considered in connection with such a reservoir system is that river regulation must always be a secondary motive and more immediate and direct uses the primary motive.

That report was made in December, 1897.

It was made under an appropriation for that special purpose in the river and harbor act of June 3, 1896.

Gen. Chittenden was then a member of the Corps of Engineers of the United States Army and was detailed to make this report.

It was approved by the Chief of Engineers on December 6, 1897, and transmitted to Congress on December 9, 1897, by the Secretary of War.

REVERSAL OF RIGHT POLICY.

Yet, notwithstanding these positive declarations by the War Department itself in 1897, that "river regulation must always be a secondary motive and more immediate and direct uses the primary motive" for the construction of reservoirs, that will when built control floods and incidentally aid nagivation, it is now proposed in the House flood control bill to force this whole matter under the jurisdiction of the War Department, in so far as it has any relation to flood control.

This is the more extraordinary when the fact is recalled that for several years after the Chittenden report was made, in 1897, strenuous efforts were made by western Senators and Congressmen to get appropriations for reservoir construction in the West into the river and harbor bill, to be built through and under the jurisdiction of the War Department, exactly as the House flood-control bill now proposes shall be done, if done at all.

All those efforts for reservoirs to be built by the Army engineers "to prevent floods and overflows, erosion of river banks and breaks of levees, and to reinforce the flow of streams during drought and low-water season" were unsuccessful. The House of Representatives set its face squarely against the proposition and even went so far as to accept the failure of the river and harbor bill at the session of 1900–1901, rather than yield this point for which the House so steadfastly contended.

It would be a strange inconsistency if the Congress should now reverse its position, after having stood its ground so steadfastly that it finally forced the enactment of the United States reclamation act in June, 1902, as a means of providing, through the Interior Department, for the construction of the reservoirs so much desired by the people of the West, under a plan which provides that the lands benefited shall bear the burden of the cost of the improvement.

ARID REGION EXCLUDED FROM BENEFITS.

Would it not be still more strange for the Congress at this late day, after the vast work that has been done under the United States reclamation act, and the completion by the Reclamation Service, at a cost of nearly a hundred million dollars, of such magnificent structures as the Elephant Butte Dam, the Arrowhead Dam, the Pathfinder Dam, the Shoshone Dam, the Belle Fourche Dam, the Roosevelt Dam, the Lahontan Dam, the Laguna Dam, and many others, standing as monuments to the wisdom of Congress in enacting the reclamation act, to reverse itself and practically declare that in all future work having any relation to flood control it must be done under the Army engineers and under the river and harbor bill system?

Would not that be to practically exclude the whole arid region from any participation in the benefits of a national flood-control policy?

The Reclamation Service, under the reclamation act, applying it to all lands, whether public or private, can work out plans for flood control on all western rivers, whether they be in Montana or Texas, that will provide flood control at the cost of the lands benefited by the use of the flood waters for irrigation.

The Army engineers can not do that. So they ignore irrigation and plan to waste the flood waters instead of to utilize them beneficially for irrigaiton. The best evidence of that is to be found in a comparison of the Sacramento River project, as approved by the engineers, for which $5,600,000 is appropriated by this majority bill, with the report of the Reclamation Service on the same project.

RECLAMATION SERVICE SURVEYS ON SACRAMENTO.

The Reclamation Service report is entitled: "Cooperative Investigations in California; Report on Iron Canyon Project, by the Office of the United States Reclamation Service at Portland, Oreg., October, 1914; and Report by Board of Review, appointed by the Secretary of the Interior, 1914.

This report, which is full and comprehensive, proposes to utilize for the irrigation of a tract of 225,000 acres the same identical flood water that the project approved by the Army engineers proposes to waste into Suisun Bay.

And yet the Sacramento project is represented to be completely surveyed and approved and ready for construction under the Army engineer system.

What this report of the Reclamation Service proposes to do on the Sacramento River has actually been done on other western rivers by the Reclamation Service, and flood control has actually been accomplished, with the resulting benefits on the Missouri River watershed to navigation without any part of the cost being charged against navigation.

The most striking instance of this is the Pathfinder Dam on the North Platte River.

FLOOD CONTROL BY PATHFINDER DAM.

The Pathfinder Dam on the North Platte River, in Wyoming, forms a reservoir of 1,100,000 acre-feet capacity, which, while less than the mean annual discharge at this point, is greater than the flow in minimum years. Shortly after this reservoir was constructed the North Platte Basin was visited by a flood nearly twice as great in maximum discharge as any previously recorded. The portion occurring above the reservoir was accumulated therein with only a moderate discharge flowing through the gates, yet the discharge below this reservoir was about as great as any previous flood and did considerable damage by overflowing the valley below. Had it not been for the reservoir, the flood wave would have been nearly twice as large and greatly prolonged, and it is believed would have swept away nearly all of the bridges over the North Platte River, besides inundating many towns and large areas of agricultural land. It is believed that the damage from this flood uncontrolled would have been greater than the entire cost of the reservoir. Without any special attention to the flood-control element, the Pathfinder Reservoir is bound at all times to exert a powerful regulative effect upon flood discharges in the North Platte River.

ELEPHANT BUTTE RESERVOIR.

The Elephant Butte Reservoir on the Rio Grande has been constructed with a capacity of about 2,700,000 acre-feet, and is designed primarily for irrigation. It will, however, necessarily have a great influence upon flood control in the valley below, where the river has in past inundations caused great damage to railroads and riparian property. In this case the interests of the project demand that the flood discharge be limited to the capacity of the river channel, which is about 8,000 cubic feet per second, and there is a possibility at rare intervals that a flood of nearly this magnitude may be brought into the stream below the reservoir. Plans have, therefore, been made to provide for the discharge of flood flow from a full reservoir in such a manner as to prevent the discharge of more than 8,000 cubic feet per second, and a controllable spillway is provided by which this discharge can be temporarily shut off in case of a phenomenal flood in the valley below. By these provisions it is expected at all times to control the flood discharge to within about one-quarter of the natural volume, and thus eliminate all flood damages.

COMPREHENSIVE SURVEYS HAVE BEEN MADE.

The report of Gen. Chittenden on reservoirs on the Missouri River has been supplemented by many comprehensive surveys, with plans and estimates by the United States Reclamation Service and the United States Geological Survey. A complete plan for the control of the Missouri River floods could be made in a comparatively brief time from data now on file based on surveys already made by the Government. Much valuable data are on file in the offices of the State engineers. There should be no delay in formulating such a plan.

The elaborate reservoir report of Gen. Chittenden is a good illustration of how such plans and estimates may be made without any new field work.

ILLINOIS RIVER REPORT.

Another excellent illustration of this is the recent report of the rivers and lakes commission on the Illinois River and its bottom lands, with reference to the conservation of agriculture and fisheries and the control of floods, made by Alvord and Burdick of Chicago and printed by authority of the State of Illinois.

This report and the numerous other reports above referred to and in existence bring out strongly the necessity for a correlation of the mass of disconnected data and knowledge of the facts relating to river regulation and flood control and bearing on source-stream control of the floods on the lower river. No attempt, apparently, has ever been made to collate and bring together all this material in one report, which should be a study of the complete problem of river regulation and flood control on the entire watershed of the Mississippi River and its tributaries. Until this has been done, there is no warrant for the contention that the cost will be an insurmountable objection to the construction of the reservoirs and other flood-control works. It is not a question of cost alone. It is a question of cost in relation to benefits. No plan can be made without a study of the problem that will include benefits to agriculture and power development, as well as benefits to navigation and benefits to lands subject to overflow. The complexity of the problem and the necessity, particularly in the West, of including in its study the benefits to agriculture from irrigation and from forestry, makes it impracticable for any system of administrative coordinated machinery to be satisfactory unless it accords equal recognition to the four departments of War, Interior, Agriculture, and Commerce.

IMPORTANCE OF FISHERIES.

It is a resource little appreciated, when river regulation is proposed, but the Illinois River report above referred to shows how important an element in the consideration of resources to be developed by river regulation may be the fisheries as a source of food production, a matter falling wholly as between the departments within the jurisdiction of the Department of Commerce. This is one of the beneficial results that must be considered in any comprehensive study of flood control on any watershed.

The plan of subordinating all other departments of the Government to the War Department as proposed in the House flood control bill, would be to subject the principal thing to the control of the incidental thing in the working out of flood-control problems in the whole western half of the United States.

In that vast region the use of the water for irrigation is, and must always remain, the paramount use—navigation being secondary.

EQUAL RECOGNITION OF ALL DEPARTMENTS.

All problems relating to the beneficial use of water in the western half of the United States, aside from its use for navigation, are under the Interior Department, the Agricultural Department, and the Commerce Department, and no plan for the coordination of the work of the departments or to make it more economical and efficient can operate successfully that does not give to those three departments equal recognition within the sphere of their respective jurisdictions, with the War Department within the sphere of its jurisdiction.

The necessity for the control of flood waters falling in that portion of the watershed lying to the east of the ninety-seventh meridian will be to a large extent eliminated by the control of the floods of the Ohio. If the channel of the Mississippi River is relieved of the necessity of ever carrying a heavy flood from the Ohio River, and is likewise relieved from the necessity of carrying any flood coming from the upper Mississippi, and is further relieved from any necessity for ever carrying a great flood originating anywhere in the arid region west of the ninety-seventh meridian, like the "June rise" of the Missouri, the Mississippi River below Cairo will always carry, without any danger of a devastating flood, all the flood water that will ever come into that river from any of its other tributaries as the result of rainfall anywhere east of the ninety-seventh meridian.

There can be no doubt whatever of the entire practicability of completely controlling and holding back the entire flood flow that now constitutes the dreaded June rise, because it comes from a territory where every drop of the water is needed for irrigation and will be eventually devoted to that use.

APPENDIX F.

STATEMENT SUBMITTED BY SENATOR FRANCIS G. NEWLANDS, A SENATOR FROM THE STATE OF NEVADA.

Senator NEWLANDS. Mr. Chairman, it must be conceded that after the European war closes an era of competition for the world's trade will follow in which the efficiency of every nation that participates will be taxed to the utmost. If the United States holds its ground against Germany in that competition, it can only be accomplished by meeting German efficiency at every point.

Transportation is one of the most important factors in such a competitive struggle. We can not avoid or disregard its necessity. We must plan and construct in this country a system of coordinated rail and water transportation the equal of that now in existence in Germany, or enter the forthcoming fiercely fought commercial battle for our share of the world's trade with a serious handicap.

No matter from what point of view we examine the subject, the fact is inexorable that our national needs for transportation are increasing with enormous rapidity. If those needs must be met by enlarged railroad facilities and construction, the burden on the people will be something stupendous.

COORDINATED RAIL AND WATER TRANSPORTATION.

The only way to avoid or reduce that burden is by a system of coordinated rail and water transportation, for which our rivers should be regulated and developed. Such a transportation foundation for our commercial structure can never be developed until there is a radical revolution in the methods of Congress with reference to it. Congress has proved itself incompetent under the present system to accomplish the necessary results. So long as we adhere to the old system of piecemeal single-project appropriations which has prevailed in the past just that long will we be without any well-designed and completely constructed system of coordinated rail and water transportation.

There are four principles that are fundamentally essential to the bringing into existence of such a system.

First. The grant of all necessary administrative and executive authority to a National Waterways Commission with power sufficient to enable it to first make broad and comprehensive plans and then to go ahead and carry them out.

Second. The coordination under such a Commission of all the departments of the National government dealing with any branch of this complex and interrelated subject of waters, forests, and waterways.

Third. The creation of a construction fund of not less than $60,000,000 a year for ten years, the expenditure of which must be intrusted to this administrative and executive commission just as the expenditure of the fund created by the Reclamation Act was intrusted to the Interior Department.

Fourth. The equitable apportionment of this fund between the different large waterway systems, or hydrographic or drainage basins, specifically in advance, whenever the fund shall be created.

It may not be possible to secure the inauguration of this entire plan all at one time. Congress may insist upon doing it piecemeal. But no matter by what stages it may be approached, the desired result will never be accomplished until the entire policy and plan for legislative action above outlined has been adopted by Congress.

So long as it is postponed, the commercial interests of the country will suffer, and our dreams of world-wide trade will fail of realization. The moment Congress adopts this plan, we will enter upon an era of constructive waterway development that will place the merchants and manufacturers of the United States on a par with those of Germany so far as transportation is concerned.

PLAN EMBODIED IN NEWLANDS-BROUSSARD RIVER REGULATION BILL.

This entire plan to which I have above referred is embodied in the bill known as the Newlands-Broussard river regulation bill, and though it may prove to be impossible to get that legislation enacted except by sections, or one piece at a time, the whole plan must eventually be adopted if we are ever to become a real competitor for the world's trade.

We find it universally admitted that although the United States Government has been employed for over a hundred years in working upon our rivers, river commerce has steadily declined; that on the whole the rivers are not so well adapted to navigation as they once were.

Now, where does the fault lie? Does it lie with the Board of Engineers, who are charged with the work of developing these rivers? Does it lie with Congress, or does it lie with and is it inherent in the general system, or rather no system, that exists for comprehensive river development?

Has Congress been at fault? What general legislation has it ever adopted with a view to the complete regulation of our rivers as instrumentalities of commerce? Have we ever proposed or adopted with reference to river development and regulation such a full and comprehensive measure as we adopted for the commencement and the completion of the Panama Canal? Have we ever proposed or adopted such a full and complete system of legislation as we adopted with reference to irrigation and reclamation of arid lands in 17 States?

Have the engineers been incompetent or has Congress been incompetent? The engineers demonstrated their competency in the completion of the Panama Canal, costing over $400,000,000. The engineers have demonstrated their capacity in 23 irrigation projects in 17 States, costing nearly $80,000,000 and embracing problems in engineering and in hydraulics far surpassing in difficulty those attendant upon the building of the Panama Canal. Almost all of those projects have been completed within a period of 12 years.

You may say commerce has declined upon these rivers because the railroads have taken the place of the rivers as instrumentalities of commerce. Yes; they have taken the place; but how has that place been taken? By the cruel and brutal competition of the rail carriers with the water carriers, which resulted in the destruction of the latter; and Congress has been impotent to stay the ruthless hand of the rail carriers.

RIVER TRANSPORTATION IN FOREIGN COUNTRIES.

Is river regulation and river navigation a failure elsewhere in the civilized world? Is not river transportation employed side by side with rail transportation in every civilized country in the world that has rivers? Can you point me to one that has not fully developed its rivers or is not now engaged in the work of developing its rivers? Their work is not to reclaim swamp lands but to promote commerce.

We have Germany, we have France, we have Austria, we have Russia, all of which countries either have developed or are in the work of developing their rivers to their full capacity for transportation, even going to the extreme of connecting those rivers at their headwaters and at other places with each other in such a way that they have a perfect network of waterways, consisting of natural and artificial waterways, just as complete a network as the railways themselves. There it is well understood that the rivers are to be used for cheap and bulky products, far exceeding in tonnage the valuable products, and whose cheap transportation is absolutely essential to cheap living among the people and to cheap production and manufacture everywhere.

In this country the railroads, eager to absorb the entire tonnage, have upon these products received rates that are hardly compensatory, because the products will not stand high rates of transportation, and we are constantly increasing the capitalization of the railways of the country to meet the demand of bulky transportation, which could be much more economically met by the cheaper development of our rivers for transportation. But in all those foreign and highly civilized countries we find the water carrier coordinating with the rail carrier and not sandbagged by the rail carrier, and both of them coordinating with the ocean carriers in the development of a scientific system of transportation. If the development of our rivers has failed, why has it failed? Because our engineers are incompetent? No; because Congress has been incompetent.

REDUCTION OF WATER-BORNE COMMERCE.

This reduction of water-borne commerce has been the result of the system which has been pursued by Congress. What has that system been? The system of individual initiative by Members of Congress, under which an individual Senator or an individual Representative presents a measure that relates to his particular locality, and which has the virtue perhaps of aiding commerce in some degree, but in a very large degree of expending money in the locality from which the Representative hails.

The question of flood control is a problem that can never be solved by itself alone. The formation of the Flood Control Committee in the House of Representatives was a start along a road that will merely multiply complications the further it is traveled. The cost of a complete system of flood control, independent of other considerations, will prove too great. There is just as much necessity for flood control on all rivers as on any one river. The great flood on on the Miami in 1913 may not be repeated for a generation—perhaps not for centuries. But every year destructive floods will occur on some rivers, and the only way to have genuine safety against floods is to have it on all rivers—on every tributary of the Mississippi, the Missouri, and the Ohio; on every river flowing into the Gulf of Mexico or the Gulf of California; on every river flowing into the Pacific; on every river flowing into the Atlantic. The rivers flowing from the Cascade or Sierra Nevada Ranges, and the rivers flowing from the Appalachian Range, all of them, must be safeguarded against floods. That can only be accomplished by treating flood prevention and protection as an incident to the regulation and standardization of the river's flow for all the beneficial purposes for which the water can be used which now runs to waste in floods.

That can not be worked out through such a committee as the Flood Committee of the House of Representatives. So far as congressional contact with the problem is essential, it must come through the Commerce Committee of the Senate, the River and Harbor Committee of the House, and the Interstate Commerce Committees of the Senate and House, as being the committees most largely dealing with the problems arising out of the beneficial use of the flood waters. The thing which is the principal thing must not be subordinated to that which is the incident.

UTILIZATION OF WATER ESSENTIAL TO FLOOD CONTROL.

The moment a flood is regarded as a destructive force only, that moment the right theory of safeguarding against it is lost sight of. No plan for flood control alone would ever have solved the flood problem that has been completely solved by the Elephant Butte's Dam on the Rio Grande River, by providing for the beneficial use of the flood waters for irrigation, which was so clearly described by Mr. Arthur P. Davis, Director of the Reclamation Service, in his statement before this committee. Every step along the line indicated by the appointment of the Flood Control Committee in the House of Representatives carries us just that much farther away from a practicable legislative plan for the prevention of floods and protection against them. The river and harbor system has proved a hopeless failure so far as rivers are concerned, and yet the House flood-control bill proposes to force the work of flood control under the old and discredited system of river improvements.

I do not know how many hundred millions have been spent on river improvement, and yet commerce has declined; and what remedy is now proposed by the action of the House of Representatives? The organization of a Committee on Flood Control; not the organization of a committee to create navigable rivers, not the organization of a committee to promote commerce, not a committee to beneficially utilize flood waters and thereby prevent floods, but a committee to control floods; and those floods, according to its action, are to be controlled only upon the lower reaches of the Mississippi River.

They invite the waters in this vast watershed, embracing one-half of the United States, to flow down to them without embarrassment or obstruction. They say to us, "Hurry them on; drain your lands; reclaim your swamp lands; let all the waters hurry down to the lower Mississippi River, and then we will take care of them." And how do they propose to take care of them?

By building levees mountain high on either side of the Mississippi River in order to prevent the overflow. And when we suggest that a policy may be pursued in the upper reaches of these rivers, in the great intermountain region which is the source of many rivers, in the great watershed drained by the Ohio and the Tennessee and the Cumberland and the upper Mississippi, that developments may be made there by which the flow of the water may be so obstructed as to prolong the length of the high-water season below, so that its flood height will be so reduced that it will be only one-half of the accustomed height, we are told that we are visionary; that nothing should be done in the way of obstructing or slowing up the progress of these waters; that nothing should be done in the shape of turning these waters into a national asset, into creators of wealth; but we should permit them to mass together for destruction below; and then a cry of distress comes up from our southern friends: "The waters coming from your region are destroying us. Give us $6,000,000 a year with which to put up mountains on each side of this great river to prevent these waters from overflowing our lands and from destroying our cities."

EQUAL RECOGNITION OF FOUR DEPARTMENTS.

And when we tell them that there are four departments of the Government that are engaged in the work of water conservation and water study—the Department of Commerce, the Department of the Interior, and the Department of Argiculture, in addition to the Department of War—and that each one of these departments has two or three scientific services that are engaged not only in studies, in scientific research with reference to this matter, but in actual engineering work, and that these departments ought to be brought into coordination with the War Department in plans and in works, the reply is made to us: "No; we prefer that this entire work shall remain as it has been, in the hands of but one of these departments—the War Department—and that the Engineers of the Army shall alone attend to this work," without the aid of the accumulated experience and knowledge of these scientific services, many of which for over 50 years have been serving their country faithfully and well, not only in the matter of reserch but in the matter of actual engineering work.

I have no words of criticism for the Engineer Corps of the Army. There is nothing that can be said in commendation of the integrity of that corps which I would not indorse; but I have the same words of commendation with reference to the integrity and the efficiency of the engineering corps of the Reclamation Service, composed of civil engineers. I assert without fear of contradiction that that engineer corps has solved more difficult problems with reference to hydraulics than have ever been considered by the Engineer Corps of the Army; and yet our Southern friends say that these men shall not be brought into collaboration; that you will drain the whole Union for money with which to take care of the floods in the southern reaches of this river, and you will not apply a dollar to the obstruction of these waters on their way to the lower flood reaches of the river and the application of these waters to beneficial purposes, such as making the arid lands blossom, such as the creation of water power, the development of electrical energy—entering more vitally into the lives of our people than any other agency, advancing their comfort and their convenience and diminishing their physical effort—the restoration of our forests, where vast masses of trees will drink up this moisture which otherwise would go into the streams and rivers, and develop it into fiber useful to man; and, above all, or equally with these other uses, involving the scientific control of water in such a way as to promote the reclamation and use of swamp lands as well; so that all of these uses and controls of water, creating wealth, can be developed by the very method employed for slowing up the progress of these waters falling from the heavens on the various watersheds of the country from their sources to the gulfs and oceans.

"A LACK OF CONSIDERATION."

I wish to say that with reference to the flood control bill coming from the House of Representatives I claim that there has been—I will not go so far as to say a lack of good faith, but I do claim that there has been a lack of consideration. The city of New Orleans was in danger—was fearing another flood. The reclamation association of New Orleans and the Chamber of Commerce of New Orleans have declared in favor of a bill which I have been urging for years, known as the Newlands-Broussard river-regulation bill, differing in their judgment, perhaps, from the rest of the lower Mississippi Valley, the people of which seem attached to the present system of river development and river appropriation.

The city of New Orleans, as the result of that system of inviting the waters of this great watershed to rush down the Mississippi River, by the very doors of New Orleans, has seen the flood level constantly rising in height and threatening the destruction of the city, and so the people of that city have been compelled to build their levees higher and stronger. The entire city may yet, at some time, be the victim of some failure of or defect in its levee system through a crevasse or otherwise. So, being apprehensive, as they saw the policy being carried out of building these levees higher and higher in order to prevent the waters from going over their accustomed area of overflow and thereby lowering the height of the flood below, observing that their flood level was constantly increasing in height, they sent a telegram to the Secretary of Commerce calling attention to this important question. That communication was laid before the Cabinet, and as a result of that the interdepartmental committee of Cabinet officers, appointed three years ago to consider this river-regulation bill, was called together, and what did they do?

REPORT OF INTERDEPARTMENTAL CABINET COMMITTEE.

The first thing they did was to send for those who were responsible for the Newlands-Broussard bill and for the Ransdell-Humphreys bill, assuming that these two bills covered all the proposals that could be made upon the subject. As a result of this inquiry, these gentlemen, this Cabinet committee, made a unanimous report to the President, recommending substantially the organization which has been urged by the bill which bears my name. They recommended coordination of services by the appointment of a departmental council, consisting of the Secretaries of War, of the Interior, of Commerce, and of Agriculture, with the President at its head, and authorizing that commission to bring the various services into coordination, and providing the other machinery for full and comprehensive consideration of all the problems that relate to water, including cooperation with the States.

The movement for constructive legislation by Congress along the lines embodied in the Newlands-Broussard river regulation bill or the pending bill (S. 5736) introduced by me at this session is not new. For many years the inefficiency and inadequacy of our methods of treatment of the rivers of the country have been realized by the people and have aroused an insistent demand for the substitution of a better system.

REPORT OF INLAND-WATERWAYS COMMISSION.

That demand led to the creation of the Inland-Waterways Commission in March, 1907. The commission was composed of Hon. Theo. E. Burton, chairman; Senator Francis G. Newlands, Senator William Warner, Hon. John H. Bankhead, Gen. Alexander Mackenzie, Mr. W J McGee, Mr. F. H. Newell, Mr. Gifford Pinchot, Hon. Herbert Knox Smith.

The preliminary report of the commission was made in February, 1908, and was a unanimous report. The conclusions of the commission, as embodied in that report were as follows:

> The commission is fully aware that its creation was due to a demand of the people, and that there exists an expectation in certain localities that the report here presented will include plans extending in detail to the principal waterways of the country. To prepare and consider such plans would require extended study at large expense by engineers and other experts whose services were not available. Under the instructions from the President, and in the absence of funds and of the men and time required for such study, the commission was necessarily confined in preparing this preliminary report to the more general features of "A comprehensive plan designed for the benefit of the entire country," viz, a statement of principles and an outline of policy, coupled with recommendations which if adopted will insure the continuation of the work and the practical application of the principles and policy.
>
> #### FINDINGS.
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> 1. The possibilities of inland navigation are indicated by the fact that there are in mainland United States some 25,000 miles of navigated rivers and at least an equal amount which are navigable or might be made so by improvement; there are also some 2,500 miles of navigable canals and over 2,500 miles of sounds, bays, and bayous readily connectible by canals, aggregating less than 1,000 miles in length, to form inner passages paralleling the Atlantic and Gulf coasts—these being additional to some thousands of miles (reckoned between leading ports) of regularly navigated waters in lakes and land-locked bays. These waterways lie in or along the borders of Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Vermont, Virginia, Washington, West Virginia, and Wisconsin, i. e., 42 States; while the development of rivers for irrigation, power, and other purposes will also render navigable certain

waterways in Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming. Although it is not probable that any considerable share of this vast mileage of navigable waterways will be improved to a high standard of efficiency, at least at an early date, yet the assured growth of the country and the capacity of these waters not only for navigation, but for other uses, render imperative the necessity for their control and utilization as an asset of almost unlimited value. It is desirable that these waterways, of which portions have been surveyed or improved for purposes of navigation, should be further investigated with a view to the systematic development of interstate commerce in coordination with all other uses of the waters and benefits to be derived from them.

2. While the railways of mainland United States have been notably efficient in extending and promoting the production and commerce of the country, it is clear that at seasons recurring with increasing frequency they are unable to keep pace with production or to meet the requirements of transportation.

3. While navigation of the inland waterways declined with the increase in rail transportation during the later decades of the past century, it has become clear that the time is at hand for restoring and developing such inland navigation and water transportation as upon expert examination may appear to confer a benefit commensurate with the cost, to be utilized both independently and as a necessary adjunct to rail transportation.

4. While the decline of navigation in the inland waterways was largely due to the natural growth and legitimate competition attending railway extension, it is also clear that railway interests have been successfully directed against the normal maintenance and development of water traffic by control of water fronts and terminals, by acquisition or control of competing canals and vessels, by discriminating tariffs, rebates, by adverse placement of tracks and structures, and by other means.

5. Any complete or practically successful plan for the general improvement of waterways must eventually provide for satisfactory adjustment of the relation of rail lines to such waterways. Since present and prospective railways reach all parts of the country while navigable waterways are confined to certain natural lines, it is clear that railways can so control transportation as to leave the waterways insufficient traffic to support the requisite vessels and terminals. The railways have accordingly, save in certain exceptional cases, substantially absorbed the traffic of the country, and unless the present unrestricted and short-sighted competition between the two systems is intelligently adjusted they will continue to do so. So large a portion of railway traffic is free from water competition that railways can readily afford to so reduce rates on those portions affected by such competition as to destroy the profits of the water lines without appreciably affecting the profits of the rail systems which recoup these reductions by higher rates elsewhere. This has been the case with most of the great inland waterways, excepting the Great Lakes, where the conditions of water and traffic approach those of open seas. In spite of the great increase of traffic and the continued improvement of waterways, the total river traffic of the country has steadily decreased both proportionately and absolutely, with the result that few rivers are used to anything approaching their full capacity. It will not relieve traffic congestion to improve our waterways unless the improved waterways are used; hence it is obvious that relief from the existing congestion by waterway improvement can be made permanently effective through coordination of rail and water facilities as will insure harmonious cooperation rather than injurious opposition.

6. Existing data as to the nature and amount of the internal commerce of the country are extremely meager and incomplete. Such information is essential to the intelligent treatment of the inland waterways, and it is desirable that means be employed to obtain it.

7. Improvements of navigation in inland waterways in the main affect favorably the purity of the waters and the regularity of the supply, and these objects should be carefully kept in mind. The increasing pollution of streams by soil wash and other waste substances connected with a growing population reduces the value of the water for manufacturing purposes, and renders the water supply for communities injurious to and often destructive of human life. The prevention of these evils should be considered in any scheme of inland waterway improvement.

8. Engineering works designed to improve navigation affect favorably the regimen of the streams, including floods and low waters. The annual floods of the United States occasion loss of property reaching many millions of dollars with considerable loss of life, while the low water of late summer involves large loss in diminished water supply, in reduced power, and in the fouling of streams with consequent disease and and death. It has been claimed that in specific cases the cost of works required both to control floods and meet the needs of commerce would be less than the amount of this loss. It is desirable that more detailed information be collected concerning the effects of floods and low waters and their prevention by engineering works and other devices.

9. The annual soil wash in mainland United States is estimated at about 1,000,000,000 tons, of which the greater part is the most valuable portion of the soil; it is carried into the rivers where it pollutes the waters, necessitates frequent and costly dredging, and reduces the efficiency of works designed to facilitate navigation and afford protection from floods. The direct and indirect losses from this source have not been measured, but are exceedingly large; and it is desirable that definite determinations be made with the view of devising means for reducing the loss to the land and preventing the impairment of the streams for purposes of commerce.

10. Both the regimen of streams and the purity and clarity of waters are affected by forests and other natural growth and by farming, mining, and other industrial operations over the watersheds in which they gather. Millions of acres in mainland United States have been deforested unnecessarily, and the floods and low waters ascribed to this cause have in some localities occasioned losses commensurate with the value of the timber. Means should be devised and applied for coordinating forestry, farming, mining, and related industries with the uses of streams for commerce and for other purposes.

11. The effect of wide variations in the level of navigable streams is to render difficult the establishment of necessary terminals for the handling of traffic, and thus to interfere seriously with the utilization of our inland waterways. The prevention or mitigation of such variations would be most helpful to the revival of river traffic, and means to this end should be adopted in plans for waterway improvement.

12. The storage of flood waters combined with the diversion of streams to arid and semiarid lands for purposes of reclamation by irrigation creates canals and also tends to clarify the waters and increase the seepage or return waters during times of drought. There have already been put under irrigation over 10,000,000 acres of fertile land, adding a quarter of a million homes and several hundred million dollars of taxable wealth, and it is estimated that by fully conserving the waters and by utilizing the water power developed in connection with storage and other works fully three times as much land can be reclaimed in the western half of the United States. It is desirable to continue the collection of data with a view to so adjusting irrigation and power development with navigation and other uses of the streams as to secure the highest value of the water to the greatest number of people.

13. Locks and certain other works designed to improve navigation commonly produce head and store water in such manner as to develop power available for industrial purposes, while works designed to develop power on navigable and source streams affect the navigation and other uses of river systems; and these uses must necessarily be considered together. Information concerning water power in the several States and sections is incomplete, yet it is known to be a vast and intrinsically permanent asset which should be utilized for the benefit of the people of the country, in whose interests it should be administered with careful regard for present and prospective conditions. The facts ascertained in certain specific cases furnish a basis for the claim that the value of the power would pay the cost of all engineering and other works required in such cases to control the streams for navigation and other uses. In the light of recent progress in electrical application, it is clear that over wide areas the appropriation of water power offers an unequaled opportunity for monopolistic control of industries. Wherever water is now or will hereafter become the chief source of power the monopolization of electricity produced from running streams involves monopoly of power for the transportation of freight and passengers, for manufacturing, and for supplying heat, light, and other domestic, agricultural, and municipal necessities to such an extent that unless regulated it will entail monopolistic control of the daily life of our people in an unprecedented degree. There is here presented an urgent need for prompt and vigorous action by State and Federal Governments.

14. Any comprehensive system of improvement of inland waterways will necessarily affect the drainage or reclamation of swamp and overflow lands, which are mainly rich alluvial tracts largely along or near waterways. The construction of dikes and levees or bank-protective works and the deepening of channels are often closely connected with means of control both of overflow and of underflow by drainage. It is estimated that there are 77,000,000 acres of such land, now unproductive but which, with drainage and protection from overflow, will have exceptionally high agricultural value; if divided into 40-acre farms these lands will furnish homes for 10,000,000 people.

15. The control of waterways on which successful navigation depends is so intimately connected with the prevention of floods and low waters, and works designed for these purposes with the protection and reclamation of overflow lands and works designed therefor; with the safeguarding of banks and maintenance of channels and works employed therein; with the purification and clarification of water supply, and works designed therefor in conjunction with interstate commerce; with control and

utilization of power developed in connection with works for the improvement of navigation; with the standardization of methods and facilities and the coordinating of waterway and railway instrumentalities and throughout the larger areas of the country with reclamation by irrigation and drainage, and works designed primarily for these purposes, that local and special questions concerning the control of waterways should be treated as a general question of national extent, while local or special projects should be considered as parts of a comprehensive policy of waterway control in the interests of all the people.

16. Governmental agencies whose work is related to the use and control of streams are now in existence in the Federal Departments of War, Interior, Agriculture, and Commerce and Labor; and it is desirable in order to prevent duplication of work and function and to avoid unnecessary delays in the development of the inland waterways that means should be provided for coordinating all such agencies.

17. While precise figures are not now obtainable, it is safe to say that the current value of our inland transportation facilities (of which railways form all but a small percentage) exceeds one-eighth of our national wealth; yet these facilities are so far inadequate that production is impaired and the growth of the country is retarded. While trustworthy estimates can not be made without further data, it is reasonable to anticipate that congestion of interstate commerce can be obviated in large measure by judicious improvement of waterways adapted to barge and boat traffic, at a figure much less than that estimated by competent authorities for so increasing railway facilities as to meet present needs. It is desirable that additional data be obtained by requisite expert investigation.

18. It is conservative to estimate that judicious improvement of the waterways of the country will confer direct benefits through increased transportation facilities which will exceed the cost, while the collateral benefits will be at least comparable with the gain to commerce. Under a coordinated plan, such collateral benefits as the enhanced value of lands reclaimed by irrigation and drainage, the value of water power developed, the increased values due to the prevention of floods and low waters, and the great benefits of purified and clarified water, will more than balance the cost of the works.

19. In a comprehensive system of water improvement and control designed to meet present and future needs, the practicability of any project will depend not alone on local and general demands of commerce, but measurably on attendant natural and industrial conditions, including nature of banks and bed, suitability of the ground as a foundation for works, volume of water, and liability to floods and low stages, configuration of the watershed and its susceptibility to control by judicious agriculture and forestry or by reservoirs and other means, local and general demand for pure water supply, amount and value of available water power incident to the works, proximity and cost of structural material, relations to existing and prospective projects on the same and neighboring waterways, and all other physical and economic factors entering into or tending to counterbalance the cost; and the local surveys or plans for any project should take account of all such natural and industrial conditions and be adapted to the attainment of maximum benefits at the minimum cost.

20. Existing data concerning the volume, regimen, and other physical features of most streams are meager and imperfect. Since plans for improving and controlling the waterways and utilizing the waters must rest on these facts, it is desirable that means be employed to extend and perfect physical data relating to the navigable and source streams of the country.

21. The benefits of a comprehensive system of waterway improvement will extend to all the people in the several sections and States of the country, and the means employed should be devised, so far as possible, to distribute the cost equitably through cooperation between Federal agencies, States, municipalities, communities, corporations, and individuals.

22. In order to improve the inland waterways for navigation and at the same time coordinate the agencies and means of transportation, develop the collateral benefits of waterway improvement, adapt all natural and industrial conditions related with waterways to the attainment of maximum benefits at the minimum cost, and perfect means for distributing the cost equitably between Federal agencies, States, municipalities, communities, corporations and individuals in a prompt and efficient and economical manner, it is desirable to maintain an administrative agency with large powers for the investigation and elaboration of projects under suitable legislative regulation.

23. The immediate use of natural resources in the rapid development of the country are often allowed to stand in the way of more beneficent and permanent utilization. This is especially true of all resources connected with running waters, the substantial

value of which has not been adequately appreciated. It is clearly practicable, without undue expense or interference with current use, to carry out broad plans for the complete development of the resources of the country, and thus assure to the greatest number of people the greatest good for both the present and the future; while if this is not done the temporary or partial development of these resources will prevent their full utilization for the general benefit. Steps should be taken without delay to outline and initiate the more pressing projects of conservation, and to apply practically the principle of conservation before it is too late.

24. Our unsurpassed natural wealth and the eagerness of our people for immediate results regardless of future needs have led to a policy of extravagant consumption of national resources and to an encouragement of monopoly, whereby an excessive share of such resources has been diverted to the enrichment of the few rather than preserved for the equitable benefit of the many. Monopolistic tendencies have appeared (*a*) in the extensive control of mineral fuels on public lands, whereby large values essential to the development of the country have passed beyond public regulation; (*b*) in the acquisition and needless destruction of forests, whose preservation is a public necessity for stream control for timber supply and for other purposes; (*c*) in the acquisition of controlling sites on waterways and the appropriation of valuable water powers with their segregation from public uses without adequate compensation, whereby indispensable utilities escape public regulation in the interests of the people; (*d*) in the segregation of lands, especially in the semiarid regions, whereby development is retarded so that the lands remain without benefit to commerce or advantage to the growth of the country; (*e*) in the control of products and of transportation to disturb the normal values and natural channels of trade, thereby imposing undue burdens on producers and consumers; and (*f*) in various interferences with the production and commerce of the country, whereby prosperity is curtailed and progress impeded. While such monopolistic tendencies have been conspicuous in connection with the agencies of transportation, they are now in many cases opposing the best utilization of streams by diverting their control from State and Federal jurisdiction in the public interests to personal and corporate means of excessive and burdensome profit. Since transportation is a primary factor in the existence and development of any people, and is increasingly important with the growth of population, it is essential that its means should be regulated in the public interests; and any plans for relieving congestion of transportation in the United States should be so framed as to employ all proper State, Federal, and municipal agencies in protecting from monopolistic control not only the agencies and avenues but also the materials of interstate commerce.

RECOMMENDATIONS.

A. We recommend that hereafter plans for the improvement of navigation in inland waterways, or for any use of these waterways in connection with interstate commerce, shall take account of the purification of the waters, the development of power, the control of floods, the reclamation of lands by irrigation and drainage, and all other uses of the waters or benefits to be derived from their control.

B. We recommend that hereafter both local and general benefits to the people shall be fully considered in any such plans for the improvement of navigation in inland waterways or for any use of these waterways in connection with interstate commerce; and that wherever practicable Federal agencies shall cooperate with States, municipalities, communities, corporations, and individuals with a view to an equitable distribution of costs and benefits.

C. We reccommend that hereafter any plans for the navigation or other use of inland waterways in connection with interstate commerce shall take full account of transfer facilities and sites and of the location of tracks, grades, bridges, dams, depots, and other works on navigable and source streams with a view to equitable cooperation between waterway and railway facilities for the promotion of commerce and the benefit of the people.

D. We recommend that any plans for improving the inland waterways shall take account of the present and prospective relation of rail lines to such waterways, and shall ascertain so far as may be whether such waterways when improved will be effectively used in the face of railway competition; and that the relations between railways and waterways be further examined with the purpose of devising means of rendering the two systems complementary and harmonious and making such fair division of traffic that rates and management may be coordinated economically and with benefit to the country.

E. We recommend the adoption of means for ascertaining regularly all facts related to traffic on the inland waterways and for publishing the same in a form suitable for general use.

F. We recommend the adoption of means for ascertaining and rendering available, at such rate as to meet public necessities, all requisite data related to the physical character and general utility of the navigable and source streams of the country.

G. We recommend that hereafter any plans for the use of inland waterways in connection with interstate commerce shall regard the streams of the country as an asset to the people, shall take full account of the conservation of all resources connected with running waters, and shall look to the protection of these resources from monopoly and to their administration in the interests of the people.

H. We recommend that the Congress be asked to make suitable provision for improving the inland waterways of the United States at a rate commensurate with the needs of the people as determined by competent authority; and we suggest that such provision meet these requisites, viz, expert framing of a definite policy; certainty of continuity and coordination of plan and work; expert initiative in the choice of projects and the succession of works; freedom in selection of projects in accordance with terms of cooperation; and the widest opportunity for applying modern business methods.

I. We recommend that the Congress be asked to authorize the coordination and proper development of existing public services connected with waterways; and we suggest that such enactment might provide that the President of the United States be authorized, with the advice and consent of the Senate, to appoint and organize a National Waterways Commission, to bring into coordination the Corps of Engineers of the Army, the Bureau of Soils, the Forest Service, the Bureau of Corporations, the Reclamation Service, and other branches of the public service in so far as their work relates to inland waterways, and that he be authorized to make such details and require such duties from these branches of the public service in connection with navigable and source streams as are not inconsistent with law; the said commission to continue the investigation of all questions relating to the development and improvement and utilization of the inland waterways of the country and the conservation of its natural resources related thereto, and to consider and coordinate therewith all matters of irrigation, swamp and overflow land reclamation, clarification and purification of streams, prevention of soil waste, utilization of water power, preservation and extension of forests, regulation of flow and control of floods, transfer facilities and sites and the regulation and control thereof, and the relations between waterways and railways; and that the commission be empowered to frame and recommend plans for developing the waterways and utilizing the waters, and as authorized by Congress to carry out the same, through established agencies when such are available, in cooperation with States, municipalities, communities, corporations, and individuals, in such manner as to secure equitable distribution of costs and benefits.

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Respectfully submitted.

Theodore E. Burton, *Chairman*.
Francis G. Newlands.
Wm. Warner.
J. H. Bankhead.
W J McGee.
F. H. Newell.
Gifford Pinchot.
Herbert Knox Smith.

SUPPLEMENTARY REPORT OF COMMISSIONER SENATOR FRANCIS G. NEWLANDS.

I concur in the report of the commission, but desire to emphasize my belief that it is of the highest importance that in dealing with subjects relating to the respective powers, rights, and interests of the Nation, States, municipalities, corporations, and individuals large powers and a comparatively free hand should be given to an administrative body of experts in the full development of projects, lest the complexity of the transactions, the time necessary to secure congressional approval, and difference of view as to purpose of method may result in indecision and delay, the worst enemies of effective development.

An ample fund should be provided, to be reenforced from time to time either by legislative appropriation or by bond issue, and the administrative board or commission should be given the power not only to investigate projects but also, when determined to be feasible, to enter, with the approval of the President, upon their immediate execution; but the power should be limited so as to prevent such administrative body from entering into any contract unless there are sufficient unappropriated moneys in the fund to meet the cost thereof.

Unless some method of construction and development insuring prompt decision and execution and continuous and consecutive work by a body of experts is adopted, I fear that the best of projects may be wrecked in the shoals and quicksands of legislation.

FRANCIS G. NEWLANDS.

Senator NEWLANDS. I desire to call attention particularly to the emphasis laid in this report upon the necessity for coordinating the various bureaus and services in the different departments whose work relates to water or waterways. If we are to make any progress in the right direction, that is the first thing that ought to be done. If Congress is unwilling to do more at the start than to secure this coordination, then I respectfully submit that the desired result will be accomplished by the enactment of legislation along the lines of the amendment to the river and harbor bill which I have twice offered in the Senate and which the Senate has twice voted to adopt in substantially the same form, as an amendment to the river and harbor bill.

The first time it was adopted by the Senate it was lost in conference; the second time it was subsequently stricken out on a reserved point of order.

(The copy of the amendment is here printed in full, as follows:)

That a commission, to be known as the River Regulation Commission, consisting of the Secretary of War, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, the chairman of the Commerce Committee of the Senate, the Chairman of the Interstate Commerce Committee of the Senate, the chairman of the Rivers and Harbors Committee of the House of Representatives, and the chairman of the Committee on Interstate and Foreign Commerce of the House of Representatives, is hereby created and authorized to bring into coordination and cooperation the Corps of Engineers of the Army and other scientific or constructive services of the United States that relate to the study, development, and control of waterways and water resources and subjects related thereto and to the development and regulation of Interstate and Foreign Commerce, with a view to uniting such services through a board or boards in investigating questions relating to the development, improvement, regulation, and control of navigation as a part of interstate and foreign commerce, including therein the related questions of irrigation, forestry, swamp-land reclamation, clarification of streams, regulation of flow, control of floods, utilization of water power, prevention of soil waste, cooperation of railways and waterways, and promotion of transfer facilities and sites, and in forming comprehensive plans for the development of the waterways and water resources of the country for every useful purpose by cooperation betwen the United States and the several States, municipalities, communities, corporations, and individuals within the jurisdiction, powers, and rights of each, respectively, and with a view to assigning to the United States such portion of such development, promotion, regulation, and control as can be properly undertaken by the United States by virtue of its power to regulate interstate and foreign commerce, and by reason of its proprietary interest in the public domain, and to the States, municipalities, communities, corporations, and individuals such portion as properly belongs to their jurisdiction, rights, and interests, and with a view to properly apportioning costs and benefits, and with a view to so uniting the plans and works of the United States within its jurisdiction and of the States and municipalities, respectively, within their jurisdictions, and of corporations, communities, and individuals within their respective powers and rights, as to secure the highest development and utilization of the waterways and resources of the United States: and such River Regulation Commission is authorized to appoint as members of such board or boards such engineers, transportation experts, experts in water development and utilization, and constructors of eminence as it may deem advisable to employ in connection with such plans. And for the expenses of such organization, investigation, and plans the sum of $500,000 is hereby appropriated.

Senator NEWLANDS. If Congress is willing at this time to go to the extent of inaugurating an era of actual construction under an intelligent and comprehensive system for the improvement and regulation of our rivers, then I submit that the bill now under consideration by this committee (S. 5736) embodies the needed legislation in very brief and compact form. The amount of the appropriation is not large compared with the stupendous magnitude and importance of the problems involved, but will be enough to cover the needs for urgent emergency flood-protection work not only on the Mississippi and Sacramento Rivers but on other rivers where the need for such work is just as pressing and imperative as it is on the Mississippi or Sacramento Rivers; and while that is being carried forward the complete and detailed plans, estimates, and reports can be prepared by the Board of Water Control and, through the National Waterway Commission, submitted to Congress as a basis for further and adequate appropriations.

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